REMOVAL ACTION BRANCH

ADMINISTRATIVE RECORD FILE

NL INDUSTRIES

PEDRICKTOWN, NEW JERSEY

Prepared for:
Eugene Dominach, OSC
U.S. EPA Region II
Removal Action Branch
Edison, New Jersey

Prepared by:
U.S. EPA Technical Assistance Team
Roy F. Weston, Inc.
Major Programs Division
Edison, New Jersey

November 1993

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON, NEW JERSEY 08837

Administrative Records in Local Repositories

The "Administrative Record" is the collection of documents which form the basis for the selection of a response action a Superfund site. Under Section 113(k) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), EPA is required to establish an administrative record for every Superfund site and to make a copy of the administrative record available at or near the site.

The administrative record file must be reasonably available for public review during normal business hours. The record file should be treated as a non-circulating reference document. This will allow the public greater access to the record and minimize the risk of loss or damage. Individuals may photocopy any documents contained in the record file, according to the photocopying procedures at the local repository.

The documents in the administrative record file may become damaged or lost during use. If this occurs, the local repository manager should contact the EPA Regional Office for replacements. Documents may be added to the record file as the site work progresses. Periodically, EPA may send supplemental volumes and indexes directly to the local repository. These supplements should be placed with the initial record file.

The administrative record file will be maintained at the local repository until further notice. Questions regarding the maintenance of the record file should be directed to the EPA Regional Office.

The Agency welcomes comments at any time on documents contained in the administrative record file. Please send any such comments to Mr. Eugene Dominach, On-Scene Coordinator, Removal Action Branch, USEPA Region II, Woodbridge Avenue, Edison, NJ 08837. The Agency may hold formal public comment periods at certain stages of the response process. The public is urged to use these formal review periods to submit their comments.

For further information on the administrative record file, contact Eugene Dominach at (908) 321-6666.

NL INDUSTRIES
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P. 1.0001 Memorandum to Mr. Bruce Sprague, Acting Chief, Response and Prevention Branch, United States Environmental Protection Agency, from Mr. John Czapor, Chief, Site Compliance Branch, re: Preliminary Assessment, NL Industries, Pedricktown, New Jersey, June 1, 1988.

P. 1.0002 - 1.0003 Letter to Mr. John V. Czapor, Chief, Site Investigation and Compliance Branch, USEPA Region II, from Ms. Karen Jentis, Chief, Bureau of Case Management, State of New Jersey Department of Environmental Protection, Division of Hazardous Waste Management, re: Removal of kiln slag piles and other materials at the NSNJ Pedricktown Site, March 21, 1988.

P. 1.0004 Letter to Mr. Kerwin Donato, USEPA Region II, from Mr. Dhruva G. Kanjarpane, P.E., Case Manager, State of New Jersey Department Environmental Protection, Division of Hazardous Waste Management, re: Financing to remove kiln slag piles at the NSNJ Pedricktown Site, February 17, 1988.

P. 1.0005 - 1.0006 Memorandum to Mr. Duane Harrington, OSC, Response and Prevention Branch, U.S. EPA, from Mr. Don Graham, TAT PM, and Mr. Tom Mignone, TAT QC, Weston/SPER, re: NL Industries Preliminary Site Assessment Pedricktown, Salem County, New Jersey, January 29, 1988.

P. 1.0007 Letter to Mr. Kerwin Donato, USEPA Region II, from Ms. Kara Levinson, Case Manager, Bureau of Case Management, State of New Jersey, New Jersey Department of Environmental Protection, Division of Hazardous Waste Management, December 28, 1987.

P. 1.0008 - 1.0009 Letter to Ms. Kara Levinson, State of New Jersey, Department of Environmental Protection, Division of Hazardous Waste Management, from Mr. John D. Jordan, Solicitor, Township of Oldmans, re: NL/National Smelting, Oldmans Township, Salem County, October 15, 1987.

P. 1.0010 Letter to Mr. James Marshall, Acting Director, Emergency and Remedial Response Division, United States Environmental Protection Agency, Region II, from Mr. Richard C. Salkie, Acting Director, Division of Hazardous Site Mitigation, State of New Jersey Department of Environmental Protection, September 29, 1986.

P. 1.0011 - 1.0014 Letter to Mr. Paul Kahn, State of New Jersey Department of Environmental Protection, Office of Regulatory Services, from Mr. E.L. Puckett, Executive Vice President, National Smelting of New Jersey, November 23, 1983, (Attached: Report: Certificate of Analysis Resource Conservation and Recovery Act, prepared by Mr. Robert W. Ochs, Lab Director, Century Environmental Testing Labs, Inc., for Mr. S. Holt, National Lead Industries, October 10, 1980; Report: Certificate of Analysis Resource Conservation and Recovery Act (RCRA), prepared by Mr. Richard W. Lynch, Lab Director, Century Environmental Testing Labs, Inc., signed by Mr. John E Faueli, for Mr. John Wentz, National Smelting, September 6, 1983).

1.2 Site Investigation

P. 1.0015 - 1.0024 Memorandum to Mr. Gene Dominach, from Mr. James Manfreda, TAT II, and Mr. Venkat Chitiala, TAT II QA/QC, re: Cost Estimate to Prepare Preliminary Investigation and Remedial Action Alternative Report for the NL Industries Site, November 8, 1989, (Attached: Figure 1-NL Industries Site Map, prepared by Mr. James Manfreda, TAT PM, Weston Spill Prevention & Emergency Response Division, for Mr. Gene Dominach, EPA PM, (note: undated); Figure 2 Preliminary Investigation Work Plan Schedule, NL Industries - Pedricktown, Salem County, New Jersey (Note: author unknown and undated)).

P. 1.0025 - 1.0027 Memorandum to Mr. Eugene Dominach, Removal Action Branch, U.S. EPA, from Ms. Diana Eichfeld, TAT PM, and Mr. Don Graham, TAT QC, Weston/SPER, re: Site Investigation/Estimated Removal Costs, N.L. Industries, Pedricktown, New Jersey, June 28, 1989, (Attached: Figure 1 - NL Industries Site Map, prepared by Mr. Perera, TAT PM, Weston Spill Prevention & Emergency Response, for Mr. Dominach, EPA PM, (Note: undated).

P. 1.0028 - 1.0138 Letter to Mr. Kevin Donato, Project Officer, Chief, Site Investigation and Compliance Branch, Emergency and Remedial Response Division, U.S. Environmental Protection Agency, from Mr. Frank D. Hale, Regional Office Manager, O'Brien & Gere Engineers, Inc., January 16, 1989, (Attached: Remedial Investigation/ Feasibility Study, National Smelting of New Jersey Site, Pedricktown, NJ, prepared by O'Brien & Gere, January 1989).

1.4 Work Plan

P. 1.0139 - 1.0146 Letter to Mr. Eugene G. Dominach, Incident Response and Prevention Branch, USEPA Region II, from Mr. James L. Whitehead IV, Northeast Regional Response Manager, March 5, 1991, (Attached: Work Plan for Emergency Response Services for the NL Industries Site, Pedricktown, Salem County, New Jersey, prepared by Mr. James L. Whitehead IV, Northeast Region Response Manager, O. H. Materials Corp., for Mr. Eugene E. Dominach, On-Scene Coordinator, United States Environmental Protection Agency Region II, March 7, 1991.)

P. 1.0147 - 1.0174 Letter to Mr. Eugene G. Dominach, USEPA Region II, Incident Response and Prevention Branch, from Mr. Lonnie D. Guinn, Northeast Regional Response Manager, OHM Corporation, November 2, 1989, (Attached: Work Plan for Emergency Response Services for the NL Industries Site, Pedricktown, Pedricktown Road, Salem County, New Jersey, prepared by Mr. Lonnie D. Guinn, Northeast Region Response Manager, O.H. Materials Corp., for Mr. Eugene E. Dominach, On-Scene Coordinator, United States Environmental Protection Agency Region II, November 2, 1989,(Note: unsigned)).

P. 1.0175 - 1.0189 Letter to Mr. Eugene G. Dominach, Project Manager, Site Mitigation Section, US EPA Region II, from Mr. Jeremiah J. Laurizio, Response Manager, S & D Engineering Services, Inc., re: Work Plan, April 10, 1989, (Attached: Report: NL Industries Spray Encapsulation, Work Plan, prepared by Mr. Jerry J. Laurizio, S & D Response Manager, for Mr. Eugene Dominach, EPA OSC,(Note: undated)).

1.6 Sampling Plan

P. 1.0190 - 1.0213 Work Plan: Sampling QA/QC Work Plan, NL Industries, Inc. Site, Pedricktown, Salem County, New Jersey, prepared by Mr. Ron Starks, Project Manager and Mr. Victor Vicenty, Project Coordinator, Roy F. Weston Inc., Region II - Technical Assistance Team, prepared for Mr. Eugene Dominach, On-Scene Coordinator, U.S. Environmental Protection Agency, Region II, Removal Action Branch, October 6, 1993, (Attached: Figure 1 - West Creek, NL Industries, prepared by Mr. R. Starks, TAT PM, Roy F. Weston, Inc., Major Programs Division, for Mr. E.G. Dominach, EPA PM, (note: undated); Document entitled: Calculating Particulate Action Levels (Note: undated)).

P. 1.0214 - 1.0219 Report: Slag Pile TCLP Sampling Plan, NL Industries, Pedricktown, Salem, New Jersey, prepared by Mr. Michael Mentzel, Region II Technical Assistance Team, Weston/SPER Division, for Mr. Eugene Dominach, Removal Action Branch, U.S. EPA Region II, December 1990, (Attached: Blank Sample Data Sheet; Figure 1- Slag Pile Sampling Map, (Note: undated)).

P. 1.0220 - 1.0226 Report: Air Sampling Plan NL Industries, Pedricktown, Salem, New Jersey, prepared by Mr. Michael Mentzel, Region II Technical Assistance Team, Weston/SPER Division, for Mr. Eugene Dominach, Removal Action Branch, U.S EPA Region II, November 1989, (Attached: Reference Page for Air Sampling Data found in site file, classification 2.3.1).

P. 1.0227 - 1.0232 Report: Water Sampling Plan, NL Industries, Pedricktown, Salem, New Jersey, prepared by Mr. Michael Mentzel, Region II Technical Assistance Team, Weston/SPER Division, for Mr. Eugene Dominach, Removal Action Branch, U.S. EPA Region II, November 1989.

P. 1.0233 - 1.0239 Report: NL Industries Sampling Plan, prepared by Mr. Carl Kelley, Task Leader and Mr. Anibal Diaz, Quality Assurance Officer, Roy F. Weston, Inc., for EPA Site No: E0061, August 23, 1989, (Attached: Reference Page for Sampling Data found in site file at classification 2.3.1).

1.7 Sampling Data/Data Summary Sheets/Chain of Custody Forms

P. 1.0240 - 1.0245 Facsimile Cover Sheet to Mr. Anibel Diaz, from Ms. Kathy Kauk, Environmental Industrial Research Associates, Inc., re: SAS 5405B Report, June 12, 1990, (Attached: Pesticide Organics Analysis Data Sheets).

P. 1.0246 Chain-of-Custody Record for Sample Analysis, signed by Mr. Carl Kelley, Roy F. Weston, Inc., January 26, 1990.

P. 1.0247 - 1.0248 Report: Certificate of Analysis, prepared by Mr. Henry J. Pielichowski, Tech. Lab. Supervisor, P & P Laboratories, Inc., Environmental & Clinical Toxicology, for Roy F. Weston, Inc., December 20, 1989.

P. 1.0249 Chain-of-Custody Record for Sample Analysis, signed by Mr. Carl Kelley, Roy F. Weston, Inc., December 8, 1989.

P. 1.0250 Chain-of-Custody Record for shipment of samples for analyses, signed by OHM Materials Corp., December 5, 1989.

P. 1.0251 - 1.0259 Letter to Roy F. Weston, from Mr. James Menoutis, MAIC, CPC, Manager of Laboratory Services, ANA Lab, re: analysis of eight samples, (Attached: Sampling Data: Analytical Results of Sampling of August 23, 1989 for Soil Contamination, prepared by Envirotech Research for Roy F. Weston, Inc., August 28, 1989.

P. 1.0260 - 1.0265 Report: Analysis of Air Samples Collected 11/14/89, prepared by Analab, November 14, 1989.

P. 1.0266 - Chain-of-Custody Record for shipment of samples for analyses, signed by Mr. Carl Kelley, Roy F. Weston, Inc., August 15, 1989.

P. 1.0267 - 1.0279 Transmittal Memo to Mr. Gene Dominach, OSC, Removal Action Branch, from Ms. Jennifer Leahy, Inorganic Data Validator, and Mr. Ron Starks, TAT PM, Roy F. Weston, Inc., re: Inorganic Data Validation, September 14, 1993, (Attached: Memorandum to Mr. Gene Dominach, OSC, USEPA, Region 2, from Ms. Jennifer Leahy, INorg. Validator, TAT Data Review Team, re: QA/QC Compliance Review Summary, September 14, 1993, Analytical Data).

P. 1.0280 - 1.0288 Memorandum to Mr. Eugene Dominach, OSC, from Mr. Don Graham, TAT PM and Mr. Tom Mignone, TAT QC, Weston/SPER, re: Encapsulation of Slag Piles, NL Industries, Pedricktown, NJ, November 16, 1988, (Attached: Documentation of background information, (Note: author unknown, undated); Report: Evaluation of Encapsulation of Slag Piles With Semi-Pave at NL Industries, Pedricktown, NJ, prepared by Mr. Dilshad J. Perera, Technical Assistance Team, Roy F. Weston, Inc., for U.S. EPA, May 1989).

1.10 Endangerment/Risk Assessments

P. 1.0289 - 1.0293 Report: Preliminary Health Assessment for NL Industries, Pedricktown, Salem County, New Jersey, prepared by Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, April 10, 1989.

1.11 Correspondence

P. 1.0294 Memorandum to Mr. George Zachos, Acting Chief, Response and Prevention Branch, from Mr. John V. Czapor, Chief, Site Compliance Branch, United States Environmental Protection Agency, Region II, re: NL Industries, Inc. Site, Removal Action Assessment, July 1, 1988.

P. 1.0295 - 1.0299 Letter to Mr. John V. Czapor, Chief, Site, Investigation & Compliance Branch, USEPA Region II, from Ms. Melinda Dower, Chief, Bureau of Case Management South, State of New Jersey Department of Environmental Protection, Division of Hazardous Waste Management, re: Use of Escrow Funds for Removal of Materials at NL/NSNJ Site Oldmans Township, Salem County, June 21, 1988, (Attached: Letter to Honorable Jack Collins, from Mr. Edward J. Rosinski, Chairman, Oldmans Planning Board, re: NL-NS Site Oldmans, May 6, 1988; Letter to Mr. Jonh D. Jordan, Solicitor, Oldsman Township, from Mr. Dhruva G. Kanjarpane, P.E., Case Manager, Bureau of Case Management, Division of Hazardous Waste Management, State of New Jersey Department of Environmental Protection, re: NL Industries/National Smelting Site, Oldmans Township, New Jersey, April 12, 1988; Letter to Ms. Levinson, Case Manager, Division of Hazardous Waste Management, State of New Jersey Department of Environmental Protection, from Mr. John D. Jordan, Solicitor, Oldmans Township, Jordan and Jordan Attorney at Law, re: NL

Industries/National Smelting Site, Oldmans Township, New Jersey, March 21, 1988).

2.2 Action Memoranda & Amendments

P. 2.0001 - 2.0018 Request for a Ceiling Increase and a Removal Action Restart at the National Lead Industries Inc. Site, Pedricktown, Salem County, New Jersey, to Mr. William J. Muszynski, P.E., Acting Regional Administrator, from Mr. Eugene Dominach, On Scene Coordinator, Removal Action Branch - Section A, United States Environmental Protection Agency, through Mr. George Pavlou, Acting Director, Emergency and Remedial Response Division, July 14, 1993, (Attached: Figure 1 - NL Industries, Pedricktown, NJ, prepared by Mr. V. Reddy/Mr. J. Menfreda, TAT PM, for Mr. Eugene Dominach, EPA PM; Figure 2 - NL Industries Site Map, prepared by Mr. J. Manfreda, TAT PM, for Mr. E. Dominach, EPA PM; Figure 3 - West Creek, NL Industries, prepared by Mr. E.G. Dominach, TAT PM, for Mr. M. Wiggett, EPA PM; Figure 4 - West Creek, NL Industries, prepared by Mr. E. G. Dominach, TAT PM, Roy F. Weston, Inc., Major Programs Division, for Mr. M. Wiggett, EPA PM; Figure 5 - Toxic Effects Chart, prepared by Mr. J. Manfreda, TAT PM, Roy F. Weston, Major Programs Division, for Mr. E. Dominach, EPA PM).

P. 2.0019 - 2.0036 Request for a Removal Action Restart and Ceiling Increase at the National Lead Industries Site, Pedricktown, Salem County, New Jersey, to Mr. Constantine Sidmon Eristoff, Regional Administrator, from Mr. Eugene Dominach, On-Scene Coordinator, Removal Action Section A, United States Environmental Protection Agency, Region II, through Ms. Kathleen C. Callahan, Director, Emergency and Remedial Response Division, May 28, 1992, (Attached: Figure A - NL Industries, Pedricktown, NJ, prepared by Mr. V. Reddy/Mr. J. Menfreda, Weston, Spill Prevention & Emergency Response Division, for Mr. Eugene Dominach, EPA PM; Figure B - NL Industries Site Map, prepared by Mr. J. Manfreda, TAT PM, Roy F. Weston, Inc., Major Programs Division, for Mr. E. Dominach, EPA PM; Figure C - Toxic Effects Charts, prepared by Mr. J. Manfreda, TAT PM, Roy F. Weston, Major Programs Division, for Mr. E. Dominach, EPA PM; Figure D - Work Schedule, prepared by Mr. J. Manfreda, TAT PM, Roy F. Weston, Inc., Major Programs Division, for Mr. E. Dominach, EPA PM; Table 1 - NL Industries Recycled Materials, author and date unknown/Table 2 - NL Industries Materials Disposed Off-site, author and date unknown).

P 2.0037 - 2.0042 Request for a Ceiling Increase; a 12-Month Exemption; Confirmation of Verbal Approval and Change in Scope for the National Lead Industries Site, Pedricktown, Salem County, New Jersey, to Mr. Constantine Sidmon-Eristoff, Regional Administrator, from Mr. Eugene Dominach, On-Scene Coordinator, Removal Action Branch, United States Environmental Protection Agency Region II, through Mr. Richard L. Caspe, P.E., Director, Emergency and Remedial Response Division, January 22, 1991, (Attached: Table I - Summary of Chemical Constituents in Different Waste Streams, NL Industries, Pedricktown, New Jersey, author unknown and undated; Figure A - NL Industries, Pedricktown, NJ, prepared by Mr. V. Reddy/Mr. J. Menfreda, TAT PM, Roy F. Weston, Inc., Spill Prevention & Emergency Response Division, for Mr. Eugene Dominach, EPA PM; Figure B - Site Map, prepared by Mr. J. Manfreda, TAT PM, Roy F. Weston, Inc., Major Programs Division, for Mr. E. Dominach, EPA PM; Figure C - Toxic Effects Chart, prepared by Mr. J. Manfreda, TAT PM, Roy F. Weston, Inc., Major Programs Division, for Mr. E. Dominach, EPA PM; Figure D - Work Schedule, prepared by Mr. J. Manfreda, TAT PM, Roy F. Weston, Inc., Major Programs Division, for Mr. E. Dominach, EPA PM).

P. 2.0043 - 2.0051 Request for a Twelve Month Exemption for the NL Industries Site, Pedricktown, New Jersey - ACTION MEMORANDUM, to Mr. Constantine Sidamon-Eristoff, Regional Administrator and Mr. Stephen D. Luftig, Director, Emergency and Remedial Response Division, United States Environmental Protection Agency, from Mr. Eugene Dominach, On-Scene Coordinator, Removal Action Branch, United States Environmental Protection Agency, Region II, February 28, 1990.

P. 2.0052 - 2.0069 Funding Request for a Phase II Removal Action for the NL Industries, Inc. Site, Pedricktown, Salem County, New Jersey, ACTION MEMORANDUM, to Mr. William J. Muszynski, P.E., Acting Regional Administrator, from Mr. Eugene Dominach, On-Scene Coordinator, Removal Action Branch, United States Environmental Protection Agency Region II, through Mr. Stephen D. Luftig, Director, Emergency and Remedial Response Division, September 8, 1989.

P. 2.0070 - 2.0088 Funding Request for a Removal Action; NL Industries Inc. Site, Pedricktown, Salem County, New Jersey- ACTION MEMORANDUM, to Mr. Stephen D. Luftig, Director, Emergency and Remedial Response Division, from Mr. Eugene G. Dominach, On-Scene Coordinator, Response and Prevention Branch, United States Environmental Protection Agency Region II, December 19, 1988, (Attached: RI/FS Material Inventory (note: author unknown, undated)).

3.2 Community Relations Plan

P. 3.0001 - 3.0021 Report: Community Relations Plan, NL Industries, Pedricktown, New Jersey, prepared by Ms. Amy Bergmueller, Weston/MPD, for Mr. Eugene Dominach, OSC, U.S. EPA, Emergency and Remedial Response Division, Removal Action Branch, (Note: undated), (Attached: Figure I, Site Location Map, (note: author unknown, undated); Figure 2, Site Map, (note: author unknown, undated); Site Plan, N.L. Industries, Pedricktown, N.J., prepared by Mr. V. Reddy/Mr. J. Manfreda, TAT PM, Weston, Spill Prevention & Emergency Response, for Mr. E. Dominach, EPA PM, (note: undated); Documentation of Risk Assessment of Some of the Hazardous Substances found At The Site, N.L. Industries, Pedricktown, N.J., prepared by Mr. V. Reddy/Mr. J. Manfreda, TAT PM, Weston, Spill Prevention & Emergency Response, for Mr. E. Dominach, EPA PM, (note: undated)).

P. 3.0022 - 3.0040 Report: Community Relations Plan, NL Industries, Pedricktown, New Jersey, prepared by Mr. Dave Triggs, Weston/SPER Division, for Mr. Eugene Dominach, OSC, Emergency and Remedial Response Division, Response and Prevention Branch, US EPA, (Note: undated), (Attached: Figure 1, NL Industries Site, County Location Map, prepared by Mr. Perera, TAT PM, for Mr. Dominach, EPA PM, (note: undated); Figure 2, NL Industries Site Location Map, prepared by Mr. Perera, TAT PM, for Mr. Dominach, EPA PM, (note: undated); Figure 3, NL Industries Site Map, prepared by Mr. Perera, TAT PM, for Mr. Dominach, EPA PM, (note: undated); Documentation of Hazardous Properties of Inorganic Lead, (note: author unknown, undated)).

3.3 Fact Sheets

P. 3.0041 - 3.0042 Fact Sheet: NL Industries, Pedricktown, New Jersey, prepared by Region 2, January 9 through May 31, 1989.

P. 3.0043 - 3.0045 Fact Sheet: Superfund Update, NL Industries, Pedricktown, New Jersey, prepared by EPA Region 2, June 1988.

3.6 Press Coverage

P 3.0045A Newspaper article: "State asked to probe NL site, Cleanup damages sought," by Ms. Karen Zabel, Staff Writer, Today's Sunbeam, January 25, 1990.

P. 3.0045B - 3.0046 Newspaper article: "Oldmans' Dilemma: The NL Industries Toxic Waste Site," (Photo), by Mr. Steve Goldstein, (Attached: Newspaper article: Finally, NL cleanup appears on track," by Mr. Bryon Kurzenabe, Staff Writer, (Note: undated)).

P. 3.0047 Newspaper article: "Oldmans' Dilemma: The NL Industries Toxic Waste Site, Who will fund the cleanup?," by Mr. Bryon Kurzenabe, Staff Writer, Today's Sunbeam, January 18, 1990.

P. 3.0048 - 3.0049 Newspaper article: "Oldmans' Dilemma: The NL Industries Toxic Waste Site, Can EPA handle cleanup at NL?," by Mr. Bryon Kurzenabe, Staff Writer, Today's Sunbeam, January 17, 1990.

P. 3.0050 - 3.0051 Newspaper article: "Oldmans' Dilemma: The NL Industries Toxic Waste Site, Did NL stage buying plant?", by Mr. Bryon Kurzenabe, Staff Writer, Today's Sunbeam, January 16, 1990.

P. 3.0052 - 3.0054 Newspaper article: "Oldmans' Dilemma: The NL Industries Toxic Waste Site, Second of A Sixth-Part Series," (Photo), by Mr. Steve Goldstein, (Attached: Newspaper article: "Oldmans' Dilemma: The NL Industries Toxic Waste Site, NL and residents differed on image," by Mr. Bryon Kurzenabe, Staff Writer, Today's Sunbeam, January 15, 1990.

P. 3.0055 - 3.0061 Newspaper article: "Oldmans' Dilemma: The NL Industries Toxic Waste Site," (Photo), by Mr. Steve Goldstein, (Attached: Newspaper article: "Oldmans welcome the new industry at first, but troubles soon began, How a dream turned sour," by

Mr. Bryon Kurzenabe, Staff Writer, Today's Sunbeam, January 14, 1990.

P. 3.0062 Newspaper article: "NL landfill has long been subject of complaints," by Mr. Bryon Kurzenabe, Staff writer, undated.

4.3 Affidavits/Subpoenas

P. 4.0001 United States Bankruptcy Court For the District, Notice Pursuant to Rule 23, In re: National Smelting & Refining Co., Inc. Debtor, Bankruptcy No. 84-B-00948-J, February 4, 1988.

5.5 Congressional Correspondence

P. 5.0001 - 5.0003 Letter to Mr. Dhruva G. Kanjarpane, Case Manager, Department of Environment Protection, Division of Hazardous Waste Management, from Mr. Jack Collins, Assemblyman, 3rd District, The Assembly State of New Jersey, Trenton, re: request of funds to be spent, June 3, 1988, (Attached: Letter to Honorable William J. Hughes, House of Representatives, from Mr. Constantine Sidamon-Eristoff, Regional Administrator, re: status of multi-phased removal action at NL Industries, Inc., Superfund site, February 5, 1990, (note: unsigned)).

6.2 Guidance Documents

P. 6.0001 EPA Regional Guidance Documents, prepared by EPA.

JUN 01 1988

100001

Preliminary Assessment, NL Industries, Pedricktown, New Jersey

Bruce Sprague, Acting Chief
Response and Prevention Branch

John Czapor, Chief
Site Compliance Branch

This is in reference to the Preliminary Assessment for a Removal Action performed by members of my staff on January 28, 1988. On that date it was determined that the conditions at this site do not meet the criteria for a CERCLA/SARA removal action for the following reasons:

1) The kiln slag piles observed on the site are stable, are contained by concrete or earth dikes, and present little threat for a direct discharge into the environment. In addition, disturbing the slag piles to further stabilize them on-site would most likely increase the probability of fires caused by the oxidation of the disturbed materials.

2) Approximately twelve 20-gallon containers of elemental sulphur were observed inside the main storage building at the site. Sulphur is not a CERCLA designated hazardous substance and as such would not be considered for removal. The sulphur containers are inside of a secure building.

3) A former supervisor at the facility reported that approximately seven 25-gallon containers of metallic sodium and seven 25 gallon containers of red phosphorus are contained within a secure industrial fire-proof room. The exterior of this room was examined and appeared to be secure from entry or fire.

An additional preliminary assessment at this site will be considered if conditions at the site deteriorate. If you have any questions concerning the assessment at this site, please contact Dwayne Harrington of my staff at FTS 340-6899.

cc: S. Luftig, 2ERR
R. Salkie, 2ERR-DD

FILE:W/Harrington
2ERR-RP:HARRINGTON:906-6899:5/27/88:Harrington #1:[redacted]Fin.6/1/88

CONCURRENCES

SYMBOL	2ERR-RP	2ERR-RP	2ERR-RP				
	HARRINGTON	FITZSIMMONS	SPRAGUE				
SURNAME	D. Harrington	6/1/88	(for)				
DATE	6/1/88		6/1/88				

EPA Form 1320-1 (12-70)

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U.S. GPO : 1984-159-319

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Let's protect our earth

Rec'd 3/24/88

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625
609 - 633 - 1408

John V. Czapor, Chief
Site Investigation and Compliance Branch
USEPA Region II
26 Federal Plaza
New York, NY 10278

21 MAR 1988

Dear Mr. Czapor:

Re: Removal of kiln slag piles and other materials at the NSNJ Pedricktown Site.

On March 4, 1988, Dhruva Kanjarpane of my staff visited Pedricktown Site. The site tour was conducted by Mr. Steve Holt of NL Industries. During this site visit Dhruva Kanjarpane observed that the following items require addressing by USEPA:

1. Lead bearing material at the battery storage sites and the area north of the truck cut (in Figure 6 of Site Operations Plan). During heavy rains, rainwater soaks into the lead bearing material and leaches the lead compounds (other than metallic lead). The contaminated rainwater overflows the paved area into surrounding soil. The contaminants eventually migrate to and may be adding pollutants to the groundwater. Therefore, this lead bearing material should be removed from the site and disposed of suitably.

2. Sulfur, Caustic Soda, Soda Ash, lime and a barrel of arsenic are stored in the plant building. Though most of these items are stored in locked rooms, as the facility is not guarded for 24 hours per day they are still exposed to vandalism and trespassing and therefore present potential public health and environmental pollution hazards. Therefore, these materials should be removed from the site and disposed of suitably.

3. The buffer stock room contains lead bearing material and therefore has the same potential hazards indicated in item 1 (when the stock room roof leaks) and item 2. Therefore, this lead bearing material should be removed from the site and disposed of suitably.

4. Some of the plant equipment and buildings are contaminated with lead bearing material and therefore should be decontaminated to safeguard public health and environment.

5. A removal action is warranted for the estimated 2,000 tons of kiln slag at the site for the reasons indicated in NJDEP's letter dated February 17, 1988 to USEPA (copy enclosed). As discussed previously you may want to explore the possibility of selling items referenced in 1,2,3, and 5 to interested parties (through advertisements or other appropriate means). Also attached is a copy of a public notice from NSNJ's Bankruptcy Court for a similar type of transaction.

In the event that you are unable to sell these materials, and to address item number 4, please contact me or Dhruva Kanjarpane of my staff to discuss the agreements required to be made between the Department and EPA in order that EPA decides to contact to address the item(s) and wishes to utilize the funds obtained by the Department from Standard Metals and deposited in a special account.

If you have any questions please contact me or Dhruva Kanjarpane of my staff at (609) 633-0701.

Sincerely,

Melinda Dower for

Karen Jentis, Chief
Bureau of Case Management

Enclosures

DGK:ch

cc: Richard Engel, DAG
Art Esposito, FIU
Kerwin Donato, USEPA
Steve McGregor, BEERA
David Kaplan, DWR
Dhruva Kanjarpane, BCM

100004

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625
609 - 633 - 1408

17 FEB 1988

Kerwin Donato
USEPA Region II
26 Federal Plaza
New York, New York 10278

Dear Mr. Donato:

Re: Financing to remove kiln slag piles at the NSNJ Pedricktown Site

As we pointed out in our letter of December 28, 1987, a removal action is warranted for the estimated 2,000 tons of kiln slag piles at the NSNJ Pedricktown Site. This removal could be financed from the amount obtained by the Department from Standard Metals, the parent company of NSNJ as a result of bankruptcy proceedings and deposited in a special account. However, recent conversations with Steve Holt of NL Industries in Hightstown and Richard F. Engel, DAG and the author indicated that about a year and a half before, NL had been approached by people who were willing to either pay for the material in the slag piles or at least remove those slag piles for free so as to recover some or all of the material in the slag piles. Therefore, we recommend that before you proceed with the removal of those slag piles using fund currently held in State accounts you should explore the possiblity of selling the slag materials to interested parties (through advertisements or other appropriate means).

In the event that you are unable to sell these materials, please contact me to discuss the agreements required to be made between the Department and EPA in order that EPA could contract to do the clean-up of the slag piles and any other material that needs to be removed using the above referenced funds.

If you have any questions please contact me at (609) 633-0701.

Sincerely,

Dhruva G. Kanjarpane, P.E.

Dhruva G. Kanjarpane, P.E.
Case Manager

DGK/jmh
c: Richard Engel, DAG
Karen Jentis, BCM
Art Esposito, FIU
Dwayne Harrington, ~~USEPA~~
Dannie Vaccari, BEERA
David Kaplan, DWR
Ed Cotterell, BC&TS

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TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

TAT-02-F-04413

MEMORANDUM

TO: Duane Harrington, OSC
Response and Prevention Branch, U.S. EPA

FROM: Don Graham, TAT PM
Tom Mignone, TAT QC

SUBJECT: NL Industries Preliminary Site Assessment
Pedricktown, Salem County, New Jersey

DATE: January 29, 1988

In accordance with TDD #8801-51, TAT assisted EPA in performing a site assessment of NL Industries on January 28, 1988.

BACKGROUND:

NL Industries is an abandoned forty-six acre site located in a mostly rural area along Penns Grove-Pedricktown Road in Pedricktown, New Jersey. The facility was opened by NL Industries in 1972 for the purpose of recycling lead from spent automotive batteries. After an eight year period riddled with environmental violations, NL Industries ceased all operations in 1980.

On October 6, 1982, NL Industries and NJDEP entered into an Administrative Consent Order (ACO) in which NL Industries was required to conduct a remedial program which included surface soil removal, prevention of surface water run-off, preparation of closure and post-closure plans for the on-site landfill, installation and sampling of groundwater monitoring wells and development and installation of a groundwater abatement system. The plant remained inactive until February 1983, when it was sold to National Smelting of New Jersey (NSNJ).

National Smelting closed the facility in 1984, when the firm declared bankruptcy. In December 1982, the site was placed on the NPL. Initially, the site was designated a state-lead site, with NJDEP taking lead responsibility for the remedial action to be conducted. In 1985, lead responsibility was transferred to EPA. Under a consent agreement signed by NL Industries with EPA in May 1986, NL Industries assumed responsibility for funding the Remedial Investigation and Feasibility Study (RI/FS) of the site. This RI/FS, which was completed with EPA supervision, determined the extent of contamination and recommended several alternatives for cleaning the site.

Due largely to public concern, EPA administration requested its Response and Prevention Branch to perform a site assessment in order to verify that no imminent public health hazards presently exist at the NL Industries site. The findings of this assessment are in the following section.

FACT FINDINGS:

Prior to performing the site assessment, TAT was updated on site activities by EPA through documentation provided by NJDEP and the EPA Remedial Branch.

Upon arrival on-site at approximately 0915 hours, EPA (D. Harrington, J. Cosentino) and TAT (T. Mignone, A. Kruczek, D. Graham) were met by an NL Industries on-scene representative (S. Holt). Prior to making an entry into the designated exclusion zone, Holt briefed EPA/TAT on the materials that were located on the site and the status of those materials which still remain on-site.

During the hours of 1200 and 1330, EPA/TAT made two level B entries so as to perform an inspection of the whole process portion of the facility. While performing the level B assessments the standard air monitoring equipment including OVA, radiac, explosimeter, and HCN monotox were employed. Upon completion of the assessment two determinations were made:

1) The visual assessment was consistent with facts obtained through the EPA Remedial Branch, NJDEP, and NL Industries on-scene representative.

2) The air monitoring assessment revealed no readings above background and thus was also consistent with facts presented by the various involved parties.

Based upon the facts presented, it was determined by the OSC (Harrington) that no further action would be taken by the EPA's Emergency Response Branch.

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625
609 - 633 - 1408

28 DEC 1987

Mr. Kerwin Donato
USEPA Region II
26 Federal Plaza
New York, New York 10278

Dear Mr. Donato:

As we have previously discussed on several occassions, the Department believes that a removal action is warranted for the kiln slag piles at the NL Industries Pedricktown Site. During a November 1983 site inspection, the Department estimated that 2,000 tons of kiln slag were stored on the property. It was realized that the accumulated slag piles could present a potential hazard to the environment and the Department ordered National Smelting of New Jersey (NSNJ) to submit a plan for the slag removal. As NSNJ ceased plant operations in January 1984, the slag piles were never removed. I am aware that the EPA is presently evaluating the feasibility of conducting an immediate removal action for the slag piles. Should the EPA decide in favor of removing the piles, the removal could possibly be financed using the $600,000 the Department received from NL as a condition of the February 1983 Amended Administrative Consent Order (AACO). The Department is currently investigating whether this expenditure would meet the legal requirements detailed in the AACO. Should you wish to meet with the Department to further discuss this subject, please do not hesitate to call me.

Sincerely,

Kara Levinson

Kara Levinson, Case Manager
Bureau of Case Management

HS206:kbl

c: Karen Jentis, DHWM
Tien-Nye Vaccari, DHSM
David Kaplan, DWR
Rick Engel, DAG
Mark McQuerrey, ORS

JORDAN AND JORDAN
ATTORNEYS AT LAW
111-113 NORTH BROADWAY
PENNSVILLE, NEW JERSEY 08070

JOHN D. JORDAN
LOIS L. JORDAN

TELEPHONE
(609) 678-3370

100008

October 15, 1987

State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
401 East State Street,
CN 028
Trenton, New Jersey 08625

Attn: Kara Levinson

RE: NL/National Smelting
Oldmans Township, Salem County

Dear Ms. Levinson:

On behalf of Oldmans Township, let me thank you again for the efforts made by you and your staff in order to communicate the concerns which we all have with respect to the National Smelting site in Pedricktown, New Jersey. During the conference on September 29, 1987, there were a number of documents which were promised to me as a representative of the Township. This letter will serve as a reminder in hopes that this information will be forwarded as soon as possible. The documents promised are:

1. An accounting as to the present status of the escrow fund and information regarding income to the fund and disbursements from the fund since it was established as a result of the February 1983 Administrative Consent Order.

2. A copy of the Sampling Plan, once it has been finalized. It was also stated that we "possibly" could have the Sampling Plan even before it is finalized. If this is permitted, we would certainly like to have the Sampling Plan at the earliest possible date.

3. A copy of the Administrative Consent Order between the DEP, EPA and NL which establishes that NL will fund the remedial investigation and feasibility study.

RECEIVED

23 NOV 1987

There are several other matters of concern, which I wish to place in writing at this point, since we were promised answers or action:

1. Please provide the name and address of the person to whom the Township may make application for reimbursement of taxes lost due to the environmental problems at the site.

2. EPA indicated that its attorneys would review the bankruptcy proceedings in order to determine the feasibility of intervening in the proceedings. Whatever information is discovered should be transmitted to the Township.

3. EPA also indicated that it would conduct a timely investigation in order to determine whether or not the slag or other material on the site is an immediate health hazard. Any information developed as a result of this investigation should be made known to the Township immediately.

One additional matter not discussed at the meeting deals with a limitation on the escrow fund posted by NL under the February 1983 Administrative Consent Order. The Administrative Consent Order requires that the fund be utilized for clean-up of the Pedricktown site, except that after ten (10) years, it can be used for any environmental purpose in New Jersey. Our discussion on September 29th indicates that clean-up may not even begin until 1992 or 1993. Because of this substantial delay, is there any possibility that the DEP will commit the entire escrow fund to the clean-up of the Pedricktown site, regardless of whether the clean-up can be commenced or completed within ten (10) years of February 1983? Please advise as to your position on this matter.

Thank you for your response to our request for information and your continued interest in this matter.

Very truly yours,

John D. Jordan, Solicitor
Township of Oldmans

JDJ/jdb
Copy: Mr. Earl Graham, Mayor
Mr. George Bradford, Deputy Mayor
Mr. Samuel Lodge, Committeeman
Mr. Edward J. Rosinski
Environmental Protection Agency

RECE...

23 NOV 1987

2. Bruce ~~TXA~~
3. File

Branch File

JE
ER
10/6

100010

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS SITE MITIGATION
CN 028, Trenton, N.J. 08625
609 - 984 - 2902

RICHARD C. SALKIE, P.E.
ACTING DIRECTOR

SEP 29 1986

James Marshall, Acting Director
Emergency and Remedial Response Division
United States Environmental
Protection Agency
Region II
26 Federal Plaza
New York, NY 10278

Dear Mr. Marshall:

I am writing in response to your September 8, 1986 letter concerning the [redacted]. The concern for site security and the potential health hazard posed by the site was originally brought to our attention by the New Jersey State Police Department.

After speaking with the State Police, the Department has determined that N.L. Industries has taken adequate steps to reduce the potential exposure of hazardous chemicals to trespassers. Moreover, it appears that additional break-ins have not occurred since the incident in late June. We will reconsider providing security in the event additional break-ins occur in the future.

EPA's responsiveness to this situation is appreciated.

Very truly yours,

Richard Salkie

Richard C. Salkie, Acting Director
Division of Hazardous Site Mitigation

HS127:plm

c: Kara Levinson, DHSM
Robert Soboleski, DHSM
Jane Engle, ORS
Tom McNevin, BEERA
Sgt. Thompson, State Police

OCT 6 1986
and ... Branch
Edison, N.J.

EPA-REGION II
OFFICE OF EMERGENCY &
REMEDIAL RESPONSE
1986 OCT -3 PM 1:06
DIRECTOR'S OFFICE

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SLAG 100011

NATIONAL SMELTING — THE NATIONAL SMELTING AND REFINING COMPANY, INC., 451 BISHOP STREET N.W., ATLANTA, GA 30318 • [illegible]
TELEX NO. [illegible]

November 23, 1983

Mr. Paul Kahn
State of New Jersey
Department of Environmental Protection
Office of Regulatory Services
CN 402
Trenton, NJ 08625

Dear Mr. Kahn:

This letter is in response to your Mailgram of November 18, 1983 and your letter of November 22, 1983 regarding storage and disposal of kiln slag at our plant in Pedricktown. It is the position of National Smelting of New Jersey, Inc. that the slag is not hazardous waste within the provisions of the New Jersey Administrative Code. However, it is also the position of National Smelting of New Jersey, Inc. to comply to the greatest extent possible with the wishes of the NJDEP. Accordingly, the following actions will be taken by National Smelting of New Jersey, Inc. until such reasonable time as the slag is assigned an identification number by the NJDEP and a mutually acceptable method for its permanent disposal is agreed to:

1) Forty (40) tons per operating day of the slag presently on site will be recharged to the kiln in order to recover any residual lead content.

2) Forty (40) tons per day (at least four (4) days per week) of the slag will be shipped off site for storage at National Smelting's Atlanta plant.

3) The above eighty (80) tons per day should be compared to the daily slag generation rate of fifty (50) tons per day yielding a net reduction of thirty (30) tons per operating day. (Currently, the kiln is only operating approximately 50% of the time; therefore, the average daily reduction rate of the slag material on site will be greater.)

4) Referring to your letter of November 22, 1983, National Smelting of New Jersey, Inc. will immediately move any slag which may not currently be stored on concrete onto the concrete. Specifically, the three (3) locations addressed in your letter will be inspected by our personnel and any slag material not on concrete will be transferred to concrete storage bins.

Attached are copies of the EP Toxicity Tests which have been performed on our kiln slag. The results clearly show that the slag <u>does</u> <u>not</u> <u>leach</u> heavy metals in concentrations which are considered hazardous. Therefore, we strongly disagree with NJDEP's contention that an imminent threat to the environment exists and that hazardous wastes are leaching into the soil, surface waters, and groundwaters. The only question that remains to be discussed is whether or not the slag may be a "reactive" waste under the qualitative RCRA definition. We are presently running laboratory tests on representative slag samples to attempt to address these questions. We, and NJDEP have previously voiced our opinions that the slag is non-reactive in the RCRA sense.

In summary, National Smelting of New Jersey, Inc. certainly desires a resolution to the slag disposal question at the earliest possible time. We are also willing to recharge and remove the slag in accordance with the above plan until reactivity tests can be completed and proper disposal techniques can be agreed upon. In, return, we respectfully request that NJDEP work <u>expeditiously</u> with us on this question once the test results are available. Further, that NJDEP expedite the acceptance of air test protocols and other pending matters regarding charging of raw materials which may be defined as "hazardous wastes".

Finally, National Smelting of New Jersey, Inc. sincerely desires to maintain our close working relationship with NJDEP. We trust this plan of action is acceptable to you. We look forward to resolving these issues at the earliest possible date.

Sincerely,

NATIONAL SMELTING OF NEW JERSEY

E.L. Puckett
Executive Vice President

ELP/dev

Attachment

CENTURY
Environmental Testing Labs, Inc.
P.O. Box 248/Jessup Road & Route I-295/Thorofare, N.J. 08086/609-848-3939

National Lead Industries
P.O. Drawer E
Pedricktown, NJ 08067

ATTN: S. Holt

Log # 09207
I.D. Kiln Slag
DATE: 10/10/80

CERTIFICATE OF ANALYSIS
RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

EPA HAZARDOUS WASTE #	CONTAMINANT	MAX CONCENTRATION (mg/l)	SAMPLE VALUE (mg/l)
D004	Arsenic	5.0	.009
D005	Barium	100.0	.6
D006	Cadmium	1.0	.01
D007	Chromium	5.0	.01
D008	Lead	5.0	.10
D009	Mercury	0.2	.01
D010	Selenium	1.0	.02
D011	Silver	5.0	.04
D012	Endrin	0.02	<0.02
D013	Lindane	0.4	<0.05
D014	Methoxychlor	10.0	<0.05
D015	Toxaphene	0.5	<0.05
D016	2,4-D	10.0	<0.03
D017	2,4,5-TP (Silvex)	1.0	<0.03
----	PCB	50	
----	pH	--	
----	Flash Point	60°C	>60°C
	Corrosiveness		Non-corrosi

LAB COMMENT:

Robert W. Ochs

Robert W. Ochs
Lab Director

CENTURY
Environmental Testing Labs, Inc.
P.O. Box 245 1501 Grandview Avenue/MidAtlantic Park/Thorofare, N.J. 08086/609-848-3939

September 6, 1983
REVISED

CLIENT: National Smelting
P.O. Box E
Pedricktown, NJ
ATTN: John Wentz

SAMPLE NO: F7854

DATE RECEIVED: July 22, 1983

SAMPLE I.D.: Kiln Slag

CERTIFICATE OF ANALYSIS

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)

EPA HAZARDOUS WASTE I.D. NUMBER	CONTAMINANT	MAXIMUM CONCENTRATION (mg/l)	SAMPLE VALUE (mg/l)
D004	Arsenic	5.0	0.002
D005	Barium	100.0	6.3
D006	Cadmium	1.0	0.03
D007	Chromium	5.0	0.36
D008	Lead	5.0	0.14
D009	Mercury	0.2	0.0002
D010	Selenium	1.0	0.041
D011	Silver	5.0	0.01
D012	Endrin	0.02	-----
D013	Lindane	0.4	-----
D014	Methoxychlor	10.0	-----
D015	Toxaphene	0.5	-----
D016	2,4-D	10.0	-----
D017	2,4,5-TP (Silvex)	1.0	-----
----	PCB	50	N.D.
----	Flash Point	60°C	60°C
----	Cyanide	-----	N.D.
----	Sulfide	-----	25%

Richard W. Lynch
Lab Director

CERTIFICATION NO. 08153

WESTON MANAGERS DESIGNERS/CONSULTANTS SM Suite 201, 1090 King Georges Post Road,
Edison, NJ 08837, • (201) 225-6116 • FAX (201) 225-7037

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

TAT-02-F-05490 **MEMORANDUM**

TO: Gene Dominach

FROM: James Manfreda, TAT II JM
Venkat Chitiala, TAT II/QA/QC

SUBJECT: Cost Estimate to Prepare Preliminary Investigation and Remedial Action Alternative Report for the NL Industries Site

DATE: November 8, 1989

In accordance with TDD #02-8909-09-2515, a cost estimate has been prepared to perform a Preliminary Investigation and Remedial Action (RI/FS type) study on the various waste streams at the NL Industries site in Pedricktown, Salem County, New Jersey.

1.0 OBJECTIVE OF THE RI/FS

The primary objective of the Preliminary Investigation (PI) is to determine the nature and extent of contamination at the NL site and to identify disposal alternatives for Hazardous Materials found on site (slag piles, lead oxide, dross material and contaminated debris). This will be accomplished by means of a comprehensive sampling program.

The objective of the Remedial Action (RA) Study is to evaluate alternatives which address site contamination as identified by the PI. Preference will be given to alternatives which include recycling, re-use, or on-site treatment where applicable.

This memorandum will not address contaminated soil or groundwater.

1.1 Specific Objectives of this PI/RA are:

- o To determine the nature and degree of hazardous waste material stored on-site and to propose the remedial action alternatives.
- o To assess the threat to public health and the environment during the removal action.

Roy F. Weston, Inc.
MAJOR PROGRAMS DIVISION
In Association with ICF Technology, Inc., C.C. Johnson & Malhotra, P.C., Resource Applications, Inc., and R.E. Sarriera Associates

- o To identify technology options for the removal action of these threats and for prevention of contaminant migration off-site.

- o To evaluate the identified remedial action options consistent with the National Contingency Plan (NCP) and their requirements to include the Superfund Amendments and Reauthorization Act (SARA).

2.0 SAMPLING AND ANALYSIS PLAN

This plan will address all field activities needed to obtain analytical data on the stored hazardous waste material. This includes waste characterization, identification of hazardous materials, and assessment of the potential for release of hazardous materials and leaching of substances from slag piles. It will contain a discussion of sampling objectives, appropriate chemical and physical analyses, sample types, location and frequency, site operation, and plan/schedule. Analytical procedures will also be discussed. In addition to this, a Quality Assurance Project Plan (QAPjP) will also be developed to ensure that proper procedures are used during the investigation.

3.0 TYPES OF WASTE STREAMS

The scope of the PI Work plan entails collecting samples from a number of waste streams and other pre-determined points. Samples will be analyzed to determine the material's identity. The following waste stream samples are be taken:

1. Slag piles
2. Lead oxide
3. Lead oxide contaminated debris
4. Other (waste) materials
5. Decontamination of process building
6. Dross
7. Standing Water

3.1 Slag Piles

A. Description

The slag piles occupy approximately (RI/FS inventory report) 55,200 square feet. The slag pile areas contain nearly 2000 cubic yards of iron oxide bearing material.

The slag piles consist of residue generated from lead reclamation operations which were conducted at the facility, including dust/ash from the rotary kiln and dust collectors.

There are four slag piles A, B, C and D (Figure 1). A bituminous asphalt encapsulant was applied in April 1989, providing a protective coating to minimize airborne dispersion of dust particulates and leaching of fines by rainwater

B. Slag Pile Sampling

A site grid survey system will be utilized to define a uniform slag pile sampling strategy. The grid shall be established in the field by pegging transects intersecting at 90° angles. The slag pile will be divided into grids of approximately 50 square feet.

The sampling program will be performed at each grid location by using core sampler or hand auger techniques. Team and subcontractor personnel, wearing proper protective gear, will perform this task. All samples will be logged and stored according to proper sampling protocol. Thirty six (36) samples will be required as part of the Preliminary Investigation. The total number of samples will be based on the total square footage of the piles.

3.2 Lead Oxide

A. Description

There are approximately three hundred ten (310) cubic yards of lead oxides which require sampling before development of remedial action alternatives. The waste material is found in piping, drums, tanks, piles, and process equipment. The Action Memorandum indicates that the lead oxides are located on-site in the sweator furnace, clarifiers, filter drums, thickening tank and acid tank. There is the potential for contaminant release into the environment via airborne lead dust and surface water run-off due to the deterioration of the containers.

B. Sampling

1. Drums

There are approximately seventy (70) cubic yards of lead oxides stored in two hundred sixty (260) drums that need to be sampled. These drums are located in the facility warehouse and the outside storage areas. All drum sampling procedures will follow the OSWER Protocol (OSWER 9380-0-8).

A stainless scoop or spoon will be used, to collect samples from each area. If scoop or spoon cannot be used, an appropriate technique will be used to maintain the integrity of the collected samples. At least five (5) composite samples will be obtained from these drums.

2. Tanks, Kilns, Dust Collectors

A minimum of five (5) composite samples will be obtained from this equipment. An appropriate technique (hand core, or stainless steel trowels) will be used to obtain these samples. Methods of sampling will vary with the accessibility of the contents of each specific item, i.e., kiln, clarifier, acid tank, thickener tank.

3. Piles

Approximately one hundred forty (140) cubic yards of lead oxide piles are scattered throughout the site. At least two (2) composite samples will be obtained for total metals analysis.

3.3 Lead Oxide Contaminated Debris

A. Description

Lead oxide contaminated debris such as scrap, paper, feed stock, tyvek, battery materials, drums, and miscellaneous materials are scattered in the various piles throughout the site. There is approximately seven hundred (700) cubic yards of lead oxide contaminated debris.

B. Sampling

The sampling activity of lead contaminated debris will be limited because of the type of waste. Composite samples of like materials will be taken from each area using proper sampling techniques.

3.4 Other (Waste) Materials

A. Description

There are numerous deteriorated empty drums, deteriorated drums with waste material, fiber packs, kiln slag, furnace bricks, scrap metal piles, and other unknown waste materials scattered throughout the site.

B. Sampling

Other (waste) materials will be sampled using appropriate sampling techniques. At least six (6) samples will be obtained from these materials. The samples will be analyzed for target compounds so the waste can be separated for disposal.

3.5 Decontamination of Process Building

A. Description

The process building walls, ceiling, floors, structural members, piping, process and ancilliary equipment (dust collector, conveyors and exhaust systems) are covered with lead dust.

B. Sampling

The process building and all equipment will be sample wiped over an area of nine square feet on the various surfaces after high pressure water jet cleaning has been completed. Rinse water from the cleaning operation will be treated on-site, analyzed and discharged to the local sewage treatment plant.

The total number of composite wipe samples from each surface will depend on the size, configuration and area of each unit. The samples will be analyzed for heavy metals.

3.6 Dross

A. Description

The dross waste material is the skimming from the top of the refining operation. This solid material is stored in drums, bins, and crucibles.

B. Sampling

There are at least seventy five (75) drums and a few bins and crucibles on site (Action Memorandum Report). A minimum of ten (10) composite samples will be taken from these containers. A hardened steel chisel and hammer will be used to obtain the samples. The samples obtained will be composited and analyzed for heavy metals.

3.7 Standing Water

A. Description

The standing water is run-off from precipitation. The water emanates from the slag piles, and is brownish red in color and has contaminated areas within the plant. The standing water covers approximately 30,000 square feet (site visit October 16, 1989).

B. Sampling

The standing water and sediment (if any) will be sampled for disposal characterization. Samples will be collected from each pooled area, composited and analyzed for heavy metals. These samples will be collected according to the standard sampling protocol.

4.0 **AIR MONITORING**

Air monitoring will be performed at waste stream sampling locations. The Organic Vapor Analyzer and Mini Ram (PDM) measurements will be used to quantify total volatile organics and dust particulates. Field gross screening methods will be used to identify the potential problem areas.

No air samples will be taken unless real time air monitoring indicates a significant presence of organic vapors or dust particulates. If air samples are deemed necessary, a constant flow pump, Gilian HFS 113A, will be used to draw the sample through an appropriate sample tube (charcoal, polyurethane foam or tenax) for organic vapors. Filter cassettes (37mm) will be used for dust particulates in accordance with standard air sampling procedures.

5.0 **HEALTH AND SAFETY PLAN (HSP)**

The existing HSP will be updated to include the various tasks which will be performed in the sampling operations.

6.0 **COST ESTIMATE**

This report provides a cost estimate for sampling and analysis of the various waste streams to properly categorize them for alternative methods of disposal. The detailed costs for sampling each waste stream are listed below; TAT costs are included in the cost estimate.

6.1 Cost Estimate for Sampling and Analyses

The cost estimate for sampling and analyses are detailed below:

1. Sampling and Analyses

A. Slag Piles

	$ 9,088
	$ 43,200

B. Lead Oxide

	$ 4,544
	$ 24,000

C. Contaminated Debris

	$ 4,544
	$ 20,000

D. Other (Waste) Materials

	$ 9,088
	$ 8,000

E. Process Building

	$ 13,632
	$ 18,000

F. Dross

	$ 6,816
	$ 7,200

G. Standing Water

	$ 1,136
	$ 4,800
SUBTOTAL	$174,048

6.2 The cost estimate for determining the Remedial Action of the various disposal options is detailed below:

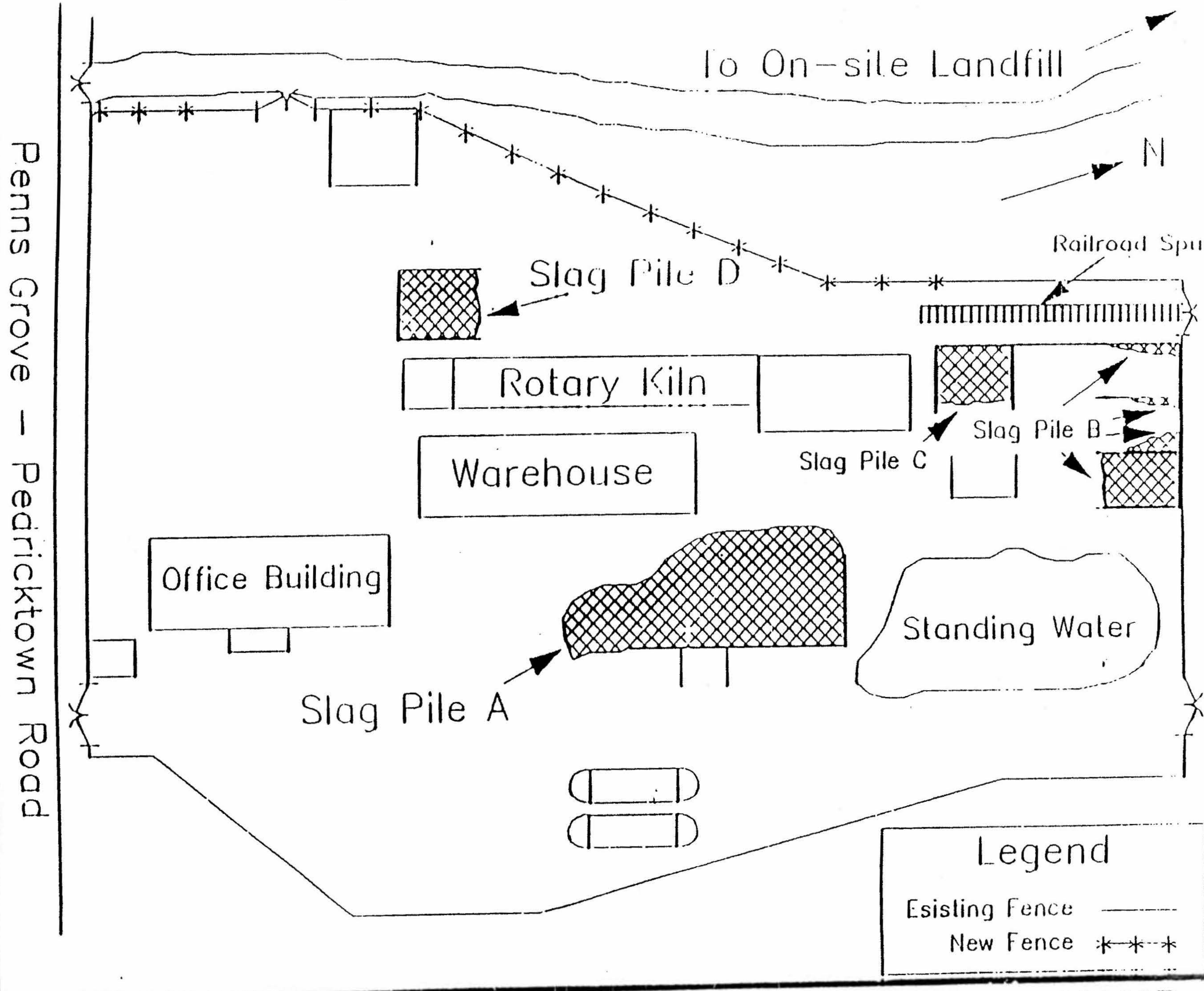
TAT Costs	
	$ 36,000
	$ 5,680
	$ 41,680
TOTAL COSTS FOR THE REMEDIAL ACTION STUDY INCLUDING SAMPLING TOTAL	$215,728
ROUNDED ESTIMATE	$216,000

7.0 PROJECT SCHEDULE

The project schedule for the proposed PI/RA study is presented in Figure 2. This Figure illustrates the schedule for individual tasks and anticipates timing of sampling, analysis and deliverables.

Duration of the project is approximately 19 weeks. This schedule is partially based on the EPA review and sampling analysis periods. If these periods are exceeded, subsequent tasks will be extended at least an equal amount of time.

NL INDUSTRIES, PEDRICKTOWN, SALEM COUNTY, NJ



WESTON
SPILL PREVENTION & EMERGENCY RESPONSE DIVISION

In Association with ICF Technology Inc., C.C. Johnson & Associates, Inc., Resource Applications, Inc., Geo/Resource Consultants, Inc. and Environmental Toxicology International, Inc.

EPA PM
GENE DOMINACH

TAT PM
JAMES MANFREDA

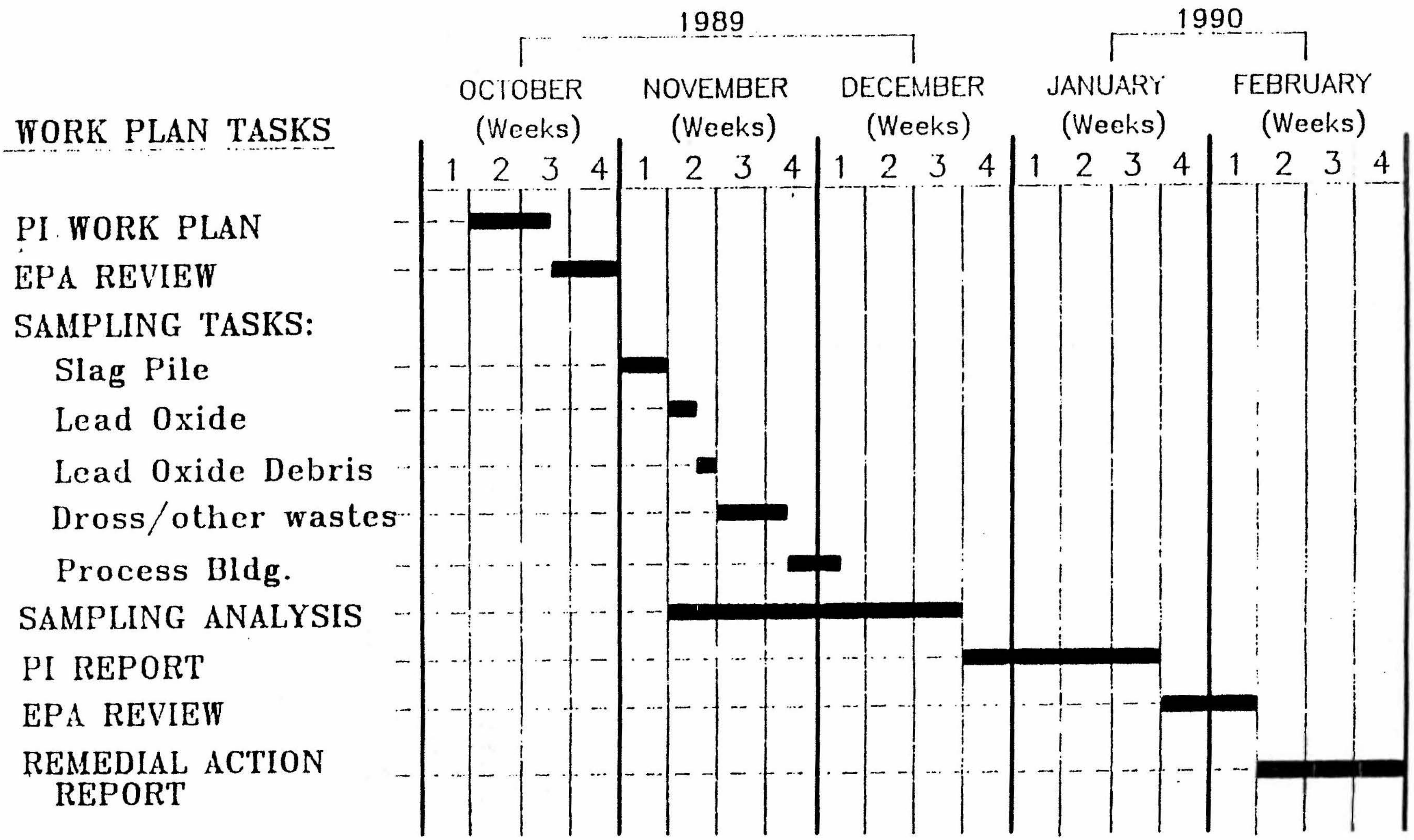
FIGURE 1

NL INDUSTRIES
SITE MAP

100024

FIGURE 2

PRELIMINARY INVESTIGATION WORK PLAN SCHEDULE
NL INDUSTRIES - PEDRICKTOWN, SALEM COUNTY, NEW JERSEY



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WESTON • SPER Suite 201, 1090 King Georges Post Road,
Edison, NJ 08837 • (201) 225-6266

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

TAT-02-F-05334

MEMORANDUM

TO: Eugene Dominach
Removal Action Branch, U.S. EPA

FROM: Diana Eichfeld, TAT PM de
for Don Graham, TAT QC

SUBJECT: Site Investigation/Estimated Removal Costs
N.L. Industries
Pedricktown, New Jersey

DATE: June 28, 1989

In accordance with TDD #8906-16, a site investigation was performed at N.L. Industries on Penns Grove-Pedricktown Road, in Pedricktown, New Jersey. The investigation was conducted by Don Graham, Neil Norrell, David Belyung, and Diana Eichfeld of the Technical Assistance Team (TAT) on June 22, 1989.

At approximately 0900 hours TAT personnel arrived at N.L. Industries where they were met by Eugene Dominach, Removal Action Branch (RAB) of the Environmental Protection Agency (EPA), and Steve Holt, of N.L. Industries.

At approximately 0950 hours, Dominach (EPA), Graham, Norrell, and Eichfeld (TAT) entered the warehouse to assess the area and ascertain whether any imminently hazardous substances were present. The Combustible Gas Indicator/Oxygen Meter (CGI/O2) and Organic Vapor Analyzer (OVA) were brought to measure ambient conditions. No above background readings were indicated in the warehouse on either instrument. However, oils, asbestos products, drums of caustic solutions, and an open container of metallic arsenic were noted.

Following investigation of the warehouse, Dominach (EPA) and Graham (TAT), using a Thyac III radiation meter, investigated a suspected radioactive source located on the second floor of the battery emmissions stack flow meter located here. Six inches from the flow meter, the radiation meter peaked erratically and briefly up to 2 mR/hr.

At this time, Norrell and Eichfeld (TAT) dipped three underground and two aboveground fuel storage tanks (see Figure 1) which were RCRA empty. TAT also measured combustibility and hydrocarbon levels of each tank. Tank #2 measured oxygen deficient (L10%) and peaked the upper explosive limit on the CGI/O2. Tank #2 also indicated a reading of greater than 1,000 units on the OVA.

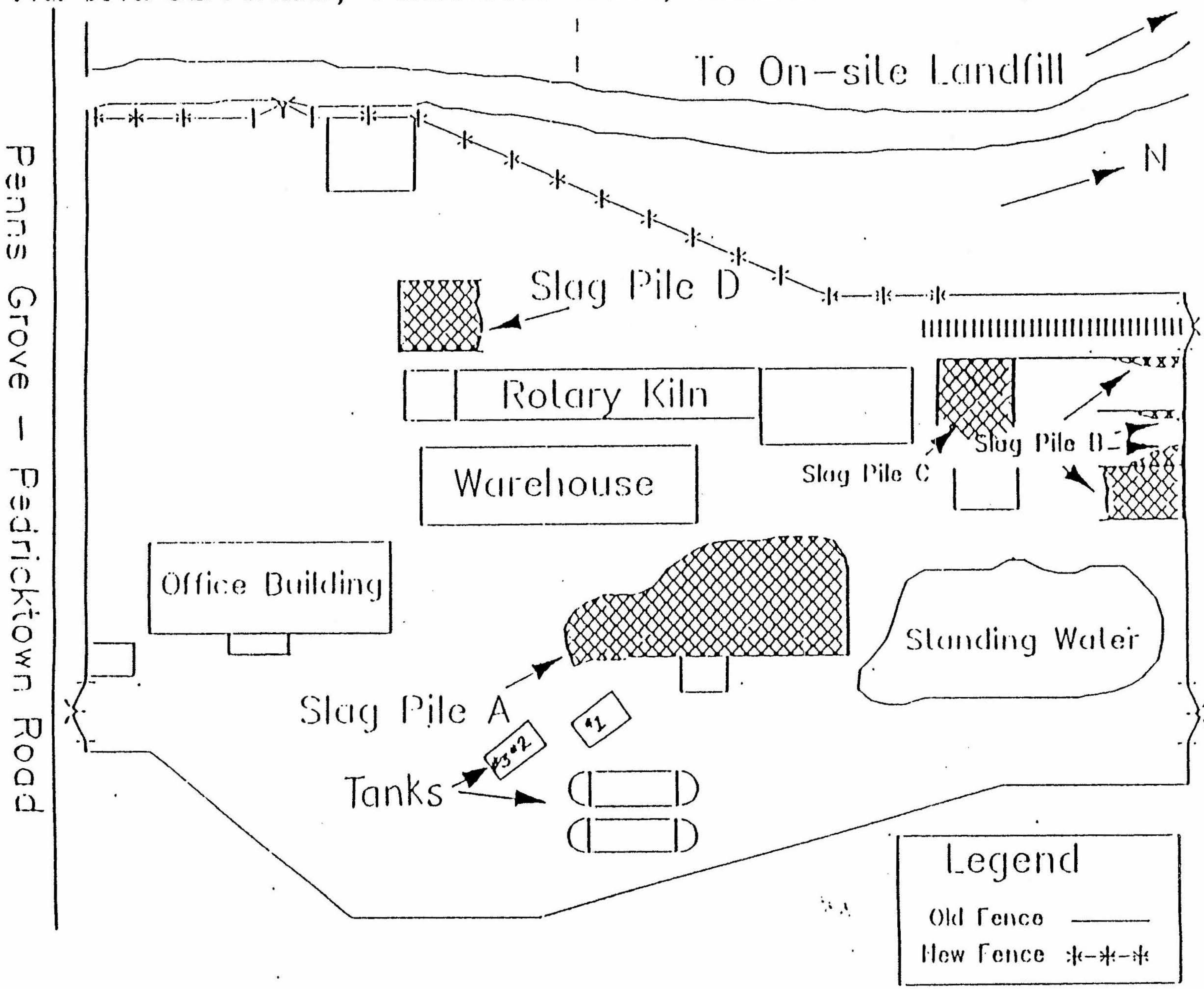
Additionally, TAT investigated a small block building located on the southeast corner of the warehouse. The building contained six 20 gallon drums of red phosphorus, six 3 gallon pails of metallic sodium, and one 55 gallon drum of powdered sodium.

After assessing the site, Dominach, Graham, and Holt informally walked the area around the main warehouse. Holt proceeded to show Dominach and Graham cylinders located on the southwest side of the warehouse.

The investigation confirmed the overall waste inventory list from the RI/FS previously furnished by N.L. Industries (see Table 1). The investigation also revealed that there are more readily removable hazardous substances, within RAB's scope of authority, on the site than previously suspected. These substances include, but are not limited to sodium nitrate, waste petroleum products, asbestos, metallic arsenic, red phosphorus, metallic sodium, unidentified cylinders, and a radioactive source (see Table 2). The imminent hazards associated with these substances include:

1. <u>Carcinogens</u>. Asbestos is a known carcinogen and requires specified removal procedures. However, the carcinogenic potential of arsenic is as of yet a paradox. The conservative approach would be to address this metal as a carcinogenic agent for removal purposes.
2. <u>Flammability and/or spontaneous combustion</u>. Red phosphorus is a shock sensitive compound which will burn violently, giving off highly toxic phosgene gas. Additionally, metallic sodium combusts violently when it comes in contact with water.
3. <u>Radiation</u>. The flow meter is a suspected gamma emitter which could lead to health effects, including cancer and mutagenesis.
4. <u>Caustics</u>. There is a significant amount of caustic material on site, including approximately twenty drums of caustic potash and soda. If exposed to caustics of this nature, a person can suffer severe bodily harm.

NL INDUSTRIES, PEDRICKTOWN, SALEM COUNTY, NJ



WESTON

SPILL PREVENTION & EMERGENCY RESPONSE

In Association with ICF Technology Inc., C.C. Johnson & Malhotra, P.C., Resource Applications Inc. and R.E. Sarriera Associates

EPA PM DOMINACE

TAT PM PEREIRA

FIGURE 1.

NL INDUSTRIES SITE MAP

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O'BRIEN & GERE

January 16, 1989

Chief, Site Investigations and
Compliance Branch
Emergency and Remedial Response
Division
U.S. Environmental Protection Agency
26 Federal Plaza
New York, NY 10278

Re: NSNJ Pedricktown, New Jersey
Facility RI/FS Administrative
Order on Concent April 30, 1988

Attention: Kevin Donato, Project Officer

Dear Mr. Donato:

In accordance with the request of Mr. S.W. Holt of NL Industries the reports listed below are enclosed.

- Interim Report - Remedial Investigation Feasibility Study-National Smelting of New Jersey Site-Pedricktown, NJ (4 copies)
- Laboratory Report (Vol 1-3)-Ground Water Analysis-October 1988
- Laboratory Report (Vol 1-3)-Soils Analysis-November 1988
- Laboratory Report-Water Analysis-December 1988
- Laboratory Report-Additional Soils Analyses-December 1988
- Laboratory Report-Soils Analysis-December 1988

In accordance with Mr. Holt's instructions, only the Interim Report is being submitted to other recipients identified in the Administrative Order on Consent.

Very Truly Yours,

O'BRIEN & GERE ENGINEERS, INC.

Frank D. Hale

Frank D. Hale
Regional Office Manager

FDH:bh
Enclosures

cc: S.W. Holt, NL Industries
J.D. Smith, Esq., NL Industries
W. Tucker, Esq., USEPA
S. Weber, NJDEP

Remedial Investigation/ Feasibility Study National Smelting of New Jersey Site

Pedricktown, NJ

NL Industries, Inc.
Hightstown, New Jersey

January 1989

O'BRIEN & GERE

INTERIM REPORT

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

NATIONAL SMELTING OF NEW JERSEY SITE

PEDRICKTOWN, NEW JERSEY

JANUARY 1989

O'BRIEN & GERE ENGINEERS, INC.
440 VIKING DRIVE, SUITE 250
VIRGINIA BEACH, VIRGINIA 23452

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PART I

REMEDIAL INVESTIGATION STUDIES

SECTION 1 - BACKGROUND

1.01 Site Background

The Pedricktown secondary lead smelter was constructed in 1971-1972 in the area illustrated on Figure 1. The smelter originally made use of a blast furnace and a reverberatory furnace for smelting. A sweater furnace was also on-site for melting of elemental lead scrap. The Pedricktown facility was upgraded to incorporate systems that would do the following:

a. Take a tractor-trailer loaded with scrap batteries and dump the scrap batteries into an acid brick lined bin by inclining the tractor-trailer to a sixty degree angle on a hydraulic ramp.

b. Crush the batteries.

c. Separate the plastic/rubber case materials, metallic lead, and lead compounds for recycling.

d. Smelt lead-bearing materials (i.e. a rotary kiln) with minimal emissions of sulfur oxides.

A detailed drawing of the plant area showing major pieces of equipment and production areas is presented in Figure 2.

NL Industries, Inc. (NL) established a permitted hazardous waste landfill on its Pedricktown facility's property. Figure 3 shows the location of the landfill, which consists of two phases - Landfill Phase A and Landfill Phase B. Landfill Phase A contains process wastes (blast furnace and kiln slag) from the facility, while Landfill Phase B also contains hard rubber case material and lead contaminated soils that were excavated from the facility's grounds. The landfill was constructed with a double liner system described in more detail in the Work Plan.

NL Industries, Inc. (NL) terminated lead smelting May 27, 1982. On October 6, 1982, NL signed an Administrative Consent Order (ACO) with the New Jersey Department of Environmental Protection (NJDEP) whereby NL agreed to undertake a variety of activities in order to address environmental conditions at the site.

NSNJ took possession of the Pedricktown property on February 24, 1983. NSNJ commenced rotary kiln smelting on May 27, 1983. NSNJ then operated the facility until January 20, 1984. NSNJ filed for bankruptcy under Chapters 11 and 7 on March 5th and 27th, 1984 respectively.

During the operation of the Pedricktown facility by NSNJ, NSNJ allowed slag waste from their processing of lead, along with other bulk, drummed and/or containerized waste materials and raw materials (including ore concentrates, fluxes and reagents) to accumulate in non-enclosed areas that were exposed to the elements. Following bankruptcy filing, the National Bank of Georgia, trustee for the site bond holders, maintained environmental personnel at the site for landfill maintenance purposes until June 15, 1984. NL voluntarily entered the site on June 18, 1984 to pump landfill leachate which had accumulated in the leachate sumps, and to maintain landfill cover materials.

1.02 Previous Studies

Several studies have been conducted from 1980 through 1986 involving soils, surface water, on-site stored materials, and ground water. The NJDEP conducted several studies which primarily dealt with industrial facilities adjacent to NSNJ property.

A soil sampling program was completed by NL in early 1981 which was conducted in response to NJDEP requests for information. The samples were obtained in late 1980. Sample locations from this study and results were presented in the Remedial Investigation Feasibility Study (RI/FS) Work Plan (O'Brien & Gere, 1987). These analyses were the basis for the excavation of contaminated plant soils and marsh sediments which took place prior to the sale of the facility. The excavated soils and sediments were placed in the RCRA landfill located on-site which was certified closed on December 15, 1983 in accordance with the NJDEP approved closure plan.

Water samples from the marsh area were collected at various times during the period from 1981 through 1983 and analyzed for a variety of parameters. The analytical results for these samples are presented in the Work Plan (O'Brien & Gere, 1987). No previous studies of the East or West Streams are known to have occurred.

Previous studies regarding bulk and containerized solids are limited to analyses of rotary furnace slag.

Analyses have previously been conducted on the landfill leachate. This leachate data is presented in Exhibit A.

A hydrogeologic study of the site was performed by Geraghty & Miller, Inc. during the installation of the ground water abatement system. Their study involved the installation of 30 wells in the water table aquifer and in the first confined aquifer. Split spoon samples were obtained to examine the underlying lithology. The permeability of a potential confining clay layer, was determined by collecting Shelby tube samples and conducting laboratory tests.

1.03 Overview

NL Industries, Inc. agreed, in an Administrative Order with the U.S. EPA, to conduct a Remedial Investigation (RI) Feasibility Study (FS). This Interim Report is to present data generated during the initial field investigations and identify what, if any, modification to the Work Plan may be justified. The Report is organized into two parts which address work completed to date and recommended supplemental studies. Each part is separated into several sections as follows:

PART I

Section 1 presents information on site history and previous studies of the site.

Section 2 presents information on demography, land use, natural resources, and climatology. This information provides an environmental setting for the study area.

Section 3 presents information on waste material present at the site including the results of the bulk and containerized material testing.

Section 4 presents the procedure and results of the hydrogeologic investigation. It includes a description of regional geology and hydrogeology. In addition, the section presents site specific information generated by the field investigation. Included is an interpretation of ground water flow as well as the presentation of water quality analyses.

Section 5 presents the results of the surface water investigation which includes surface water analyses and stream samples as well as sediment analyses.

Section 6 presents the results of the soil samples collected from the site and surrounding area.

PART II

Section 7 presents the scope of the next phase of field investigations. This addresses additional environmental sampling and analyses.

Section 8 presents specific changes to the Site Operations Plan which are suggested by the results of the initial field investigation.

References, tables and figures are included to assist the reader in understanding the complex issues involved in the program.

2.02 Demography

The 1980 U.S. Census reported the total population of Oldman Township, within which Pedricktown is located, at 1,847. Oldman Township had an average of 3.12 people per household with a median age of 31.3. The median family income for Oldman Township was $18,522.

2.03 Climatology

Climatologic data for Salem County is collected by the New Jersey Department of Agriculture. The 1987 Annual Report states that Salem County receives an average of 42.81 inches of rainfall per year. The region experiences an average temperate of 55.2°F, with a monthly average low of 33°F occurring in January and a monthly high of 77°F occurring in July. The wind rose for Philadelphia, PA airport (Figure 4), indicates that approximately 50% of the wind over 3 miles/hour is from the west (north northwest to south southwest).

SECTION 3 - WASTE CHARACTERIZATION

3.01 General

Representative samples of bulk and containerized materials identified at the facility were collected, with the exception of labeled containerized raw material and specifically identifiable bulk materials (i.e. new refractory brick, used baghouse bags and lead oxide pellets, etc.). The bulk and containerized solids consist of: slag, equipment residue and containerized solids (i.e. baghouse dust, miscellaneous process waste and raw materials). These materials are present in the plant area and warehouse.

An inventory of these materials was conducted to quantify the amounts of these materials present at the facility and to identify their locations on the site (Table 1 and Figure 2). Mr. Stephen W. Holt, the Manager of Environmental Control and Safety for NL Industries, Inc. from March 1979 to February 1983, assisted in identifying materials during the inventory.

Analyses were run on the samples of unidentified materials and identified materials to classify them as hazardous or non-hazardous. Knowledge of the composition and characteristics of identified materials were utilized in lieu of analysis. For example, lead oxide pellets are readily identifiable as are baghouse bags. The objectives of analyzing those materials which may be hazardous is to determine appropriate management approaches. For example, lead bearing ceramic industry waste would be analyzed for total lead to determine the feasibility of recycling. Only

Total lead analysis were conducted on the equipment residue samples, since they are essentially raw and intermediate materials and will likely be recycled. The characterization of the materials as hazardous or non-hazardous will determine the method of management for each type of material.

Samples were taken from bulk and containerized raw materials, with the exception of labeled containerized raw materials. The following samples were collected:

- o three composite slag samples, one each from the slag bins, battery storage bins, and dross bins;
- o eight equipment residue samples; and
- o twenty-nine containerized solids samples.

The above samples were collected manually using a carbon steel hand trowel, following the protocol outlined in the Site Operations Plan (O'Brien & Gere, 1988).

Total lead analysis was conducted on all bulk and containerized solids samples. The EP toxicity test for all metals listed in 40 CFR 261.24 was performed on all slag samples. In addition, metal analyses for the following metals: antimony, arsenic, cadmium, chromium, copper, selenium, tin, and zinc were conducted on unknown bulk and containerized solids samples.

The liquid volume of stormwater and waste water contained in the following areas was estimated: a pond on asphalt pavement at the east side of the plant area, a pond on concrete pavement in the center of the plant area, an acid pit, a thickener pit, and waste water tanks. These facilities are identified on the plant area map presented as Figure 2. Miscellaneous accumulations (less than 5000 gallons) exclusive of drums or tanks was pumped to one of the above areas prior to any inventories and sampling.

One sample was taken from each of the storage areas/facilities noted previously as holding storm or waste water. If the liquid depth at the sample location was greater than three feet, a depth compositing technique was used to obtain the samples. Otherwise, grab sampling techniques were used to obtain the samples. Rain water accumulations in uncovered drums were pumped to a storage container and sampled as a composite. The uncovered drums were covered or inverted after pumping off the accumulated rain water. Each sample taken was analyzed for pH, lead and total organic carbon (TOC).

3.02 Nature of Waste Materials

Results of the containerized liquids can be examined in Table 2. Containerized liquids have a pH that ranges from a high of 8.7 to a low of 5.2. Total Organic Carbon ranges from a low of <1 mg/l to a high of 1720 mg/l. Total lead concentration ranges from a low of 0.147 mg/l to a high of 14.5 mg/l. All of the liquid samples are significantly above the U.S. EPA Maximum Contaminant Level (MCL) for lead in drinking water. Four samples were analyzed for Total Organic Halides (TOX) from a low of <10 ppb to a high of 32.5 ppb. Four samples of containerized liquids were analyzed for gross alpha and gross beta radiologic parameters (Table 2). Gross alpha activities were less than detection limits. Gross beta activities ranged from below detection limits to 240 ± 80 pCi/l. These results are below the U.S. EPA MCL for both gross alpha and beta.

Analyses of on-site materials are presented in Tables 3 and 4. Table 3 shows that the on-site materials generally contain approximately 20% lead with a low of <1% and a high of over 50%. The average lead concentration for the 39 samples tested was 24% (w/w) with a standard deviation of 17%. Only four samples had less than 5% lead by weight. Table 4 indicates that other metals such as arsenic, tin, antimony, cadmium, and zinc were present; however, typically lead represented over 90% of the metal present in the samples tested. Material identified as dross has a lead concentration which averaged 26% (w/w). Other elements present in varying amounts, up to 1% (w/w) were tin, zinc and/or chromium. The color of the dross provided an indication of other metals present, for instance, yellow dross contained higher concentrations of tin.

Table 5 presents data from EP toxicity analyses performed on four slag samples. The results indicate that the exposed slag is EP Toxic and contains an average lead concentration of 11% lead. These results differ from those obtained by NL Industries on slag generated during their operation of the rotary kiln. NSNJ's operation was apparently different from NL Industries, using different feed materials and operating conditions.

SECTION 4 - SURFACE WATER AND SEDIMENT INVESTIGATION

4.01 Marsh, Streams and Drainage

As indicated on the topographic map and site map presented in Figures 1 and 2, respectively, a stream courses along the site's western boundary. The stream, referred to as the West Stream, receives most of the stormwater runoff from the site and eventually discharges into the Delaware River.

A marshy area which intermittently holds surface water is present on the site as shown in Figure 2. One portion of the marshy area is south of the railroad tracks (i.e. the "south marsh") and one portion is north of the railroad tracks (i.e. the "north marsh"). The north marsh and south marsh are hydraulically connected by a culvert which passes beneath the railroad tracks. Stormwater from several sections of the plant area runs off into the south marsh and through the culvert into the north marsh. An intermittent stream runs from the north marsh to the West Stream, when sufficient surface water is in the north marsh.

A second stream, located on Figure 2, runs approximately 1000 feet east of and parallel to the site's eastern property boundary. This stream, referred to as the East Stream, receives stormwater runoff from surrounding properties. During periods of extremely high flow, the East Stream reportedly backs up into an intermittent channel which discharges into the south marsh.

In order to characterize surface water quality, samples were obtained upgradient of the site, on or adjacent to the site, and downgradient of the site. The objective was to sample during both high and low flow conditions to account for water quality variations with stream flow.

To evaluate the potential for sediment transport, sediment samples were collected at eight locations in the marsh area and at the surface water sampling locations.

4.02 Sampling and Analysis

Surface water and sediment samples were obtained as per the protocol presented in the Site Operations Plan. Surface water and sediment samples were obtained at several locations as presented in Figure 5.

Regarding the West Stream, samples were obtained from each of the following locations:

- upstream of the facility's western property boundary
- immediately downstream of the facility's western property boundary
- approximately 800 feet downstream of the facility's western property boundary

The samples from the East Stream were located such that samples were obtained from each of the following areas:

- immediately upstream of the railroad track
- approximately 1000 feet downstream of the railroad track

All surface water samples were analyzed for pH and total lead. Surface water sediment and marsh sediment samples were analyzed for total lead. Surface water samples were obtained during both high flow and low flow stream conditions where flowing water was present. Two surface water locations were not sampled (locations 410/810 and 407/807). Location 407/807 did not have water present at the time of sampling under high flow conditions. Location 410/810 was not sampled due to active construction taking place at that location.

Results from the analyses of the marsh sediment samples can be viewed in Table 6. In the south marsh, areas that are closest to the plant site have the highest concentrations of lead with a maximum concentration of 1190 mg/kg. Concentrations decrease across the marsh as distance from the plant site increases. Samples from the north marsh have lower concentrations of lead than the south marsh. The highest concentration in the north marsh (238 mg/kg) is located near the intersection of the landfill road and the railroad which is the site of discharge for the north and south marsh. The lowest lead concentrations are located near the wooded area on the eastern side of the marsh.

Surface water and surface water sediment sample analyses can be examined in Table 7. Lead concentrations in the sediments range from a low of 77.5 mg/kg to a high of 1640 mg/kg on site, while off-site sediments demonstrate much higher variability with a maximum concentration of 4350 mg/kg. The highest concentration was observed in the east stream which does not receive site run-off indicating a potential alternate source of lead contamination. The stream sediment sample taken downstream of this location had less than detectable lead. Soil sample results in the vicinity, discussed in Section 5, suggest an alternate source of lead in the east stream sediments.

Analyses of the surface waters indicate that the total lead concentration of the water does not vary significantly between high and low flow conditions. Lead concentrations in the surface waters range from a low of 0.01 mg/l to a high of 3.0 mg/l. The highest concentration is located in the south marsh. Higher lead concentrations are located on-site with concentrations decreasing with increasing distance from the site.

Measurements of pH were measured in the field during low flow conditions and in the laboratory during high flow conditions. The pH is consistent across the site at approximately 3.5. The pH ranges from a high of 6.4 at location 406 to a low of 3.0 at location 404. Location 406 pH was higher than the other areas because the flow consists primarily of effluent from a waste water treatment facility which includes pH control. Additional analyses are needed to determine if the reported values in other areas are representative of acid rainfall in the area or some other source.

SECTION 5 - SOIL INVESTIGATION

5.01 Soil Description

The soils under the NSNJ site are dominated by a thin (1-2 inches) layer of top soil over a tannish-brown, sandy soil. Top soil about the site contained little plant material. In wooded areas, a thick humus layer is overlaying the soil. This humus layer is generally six to eight inches thick and had a high density of plant material. The soil under the humus was a tannish to reddish brown, sandy soil. Soils on adjacent agricultural lands have twelve to fourteen inches of rich, blackish-brown topsoil with an underlying tannish-brown, sandy soil. The thickness of topsoil in these areas is due to the depth of plowing conducted on these properties.

5.02 Sampling and Analysis

A sampling grid was developed to locate surface soil sampling points. By utilizing a grid pattern, the areal distribution of contaminants can be readily identified. A regular grid pattern also allows the use of interpolation techniques to identify concentrations of contaminants between sampling points.

Lead concentration in surface soils would be expected to be highest and most variable near the source (i.e. the site). As the distance from the source increases, the lead concentration in the surface soil would be expected to decrease and less variation in the lead concentrations would also be observed. Therefore, the surface soil sampling grid consisted of a finer grid pattern on the site and a progressively coarser pattern as the distance from the site increases.

A regularly spaced triangular grid pattern was utilized in determining on and off-site soil sampling points. A triangular grid pattern is more efficient relative to sample area coverage than is a rectangular grid pattern. Two hundred foot triangles were utilized within the property lines of the facility. Outside of the facility boundaries, two sets of four hundred foot triangles will be used, followed by a single set of eight hundred foot triangles. This provides for characterization of surface soil concentrations at distances from the facility boundaries of 1600 to 2000 feet, which represents distances of approximately 2000 to 2500 feet from the source. The surface soil sampling locations are presented in Figure 5. Supplemental sampling of the marsh area is addressed in Section 5.

Each grid point sample was composed of four discrete sub-samples collected from around the grid point and composited. A three meter diameter circle was measured around the grid point and samples were taken from the northernmost point on the circle, the southernmost point, the easternmost point and the westernmost point and then composited. When a three meter circle could not be utilized around the grid point, four discrete samples were collected along a line extending approximately twenty feet from the grid point and then composited. Composite samples were collected to represent strata of 0"-3", 3"-6", 6"-12", and 12"-18" below grade. Soil samples from the secure landfill cover were to a depth of 18 inches or to the clay layer, whichever was least. All surface soil samples were collected by hand-driven 3/4" Lexan tubes. Every effort was made to avoid collecting soil samples that were less than twenty feet from painted surfaces and/or under or immediately adjacent to trees, shrubs and/or structures. Collection sites were also located as far as possible from vehicle activity such as streets, driveways, parking areas and automobile repair areas. Soil sampling methodology is detailed in the Site Operations Plan.

Soil samples from 0"-3" and 3"-6" below grade were analyzed for total lead. Approximately 10% of the soil samples were analyzed for supplemental metals consisting of antimony, arsenic, cadmium, copper, chromium, lead, selenium, tin, and zinc. Approximately 50% of the samples to be tested for the supplemental metals were selected from on-site locations (Table 8). Examination of past data suggests considerable variance for lead concentration in soil. For this reason, the deeper samples were analyzed if the 3"-6" strata had a total lead concentration (dry weight basis) of greater than 200 ppm.

Results of the soil analyses can be examined in Tables 9 and 10. The on-site soils have concentrations of lead ranging from 18.5 mg/kg to a high of 12700 mg/kg. The top of the landfill has the lowest concentration, probably due to its construction date, off-site source of cover materials, and location relative to the plant and the prevailing winds of the area. Areas adjacent to the manufacturing area contain the highest concentrations. These high concentrations appear to be caused by runoff from plant areas that have exposed slag/dross/debris mounds in areas adjacent to where the samples were obtained.

Off-site soils present more of a pattern than the on-site soil samples. Samples to the southeast and east of the plant site contain the highest concentrations of lead of the off-site soils. This is probably caused by deposition of particles that have been carried from the plant site by prevailing winds while the plant was in operation. It can also be seen that samples with a lead concentration higher than 200 mg/kg are located in close proximity to the NSNJ site.

SECTION 6 - HYDROGEOLOGIC INVESTIGATION

6.01 Regional Geology

The geology of southwestern New Jersey is composed of Quaternary and Cretaceous sediments which lie upon a basement of early Paleozoic deposits (Table 11). Information regarding the physical character of the Cretaceous sediments has been obtained predominantly from borings and well logs in Pennsylvania and New Jersey. Cretaceous sediments consist of beds of sand and gravel separated by low permeable clays. These beds dip from 40 to 80 feet per mile to the southeast toward the Atlantic Ocean. Quaternary deposits consist of sand and gravel containing small amounts of silt and clay which are distributed throughout the lower Delaware River Valley as terraces and flood plain deposits.

The Raritan Formation consists of alternating beds of nonmarine clay, sand and gravel. At the type locality, the Raritan Formation is easily identified by lithologic evidence. Elsewhere the identification of the formation is based on less convincing lithologic evidence such as abundance of lignitic material.

The Raritan Formation is divided into six members: Farrington Sand, Lower Clay, Sayreville Sand, Middle Clay, Old Bridge Sand, and Upper Clay (Table 11). Each of the "sand" members are excellent aquifers due to the high permeability sands and gravels contained within each. The "clay" members act chiefly as confining beds separating the "sand" members into these separate aquifers.

The Old Bridge sand member, for the most part, occupies erosional depressions or scour channels in the underlying Middle Clay. The Old Bridge consists mainly of medium to coarse grained sand and contains minor amounts of fine to very fine sand. Beds of gravel are common at the base of the unit. The unit is typically light gray to yellowish brown in color and the sands are fairly well sorted with angular to subangular grains. The Old Bridge is not a distinct hydrologic unit over most of the area of its occurrence. It generally forms a continuous hydraulic unit with overlying deposits of Pleistocene sands and gravels.

The Upper Clay member is the uppermost member of the Raritan Formation. It consists of light gray sandy clays; dark gray carbonaceous clays; and massive, red, white, and yellow clays. The types of clay do not occur in any regular sequence or combination. The Upper Clay member, when present, separates the Old Bridge member from the overlying Pleistocene sands and gravels.

The Magothy formation overlies the Raritan Formation and is composed of white and buff-colored, medium to coarse grained sands with alternating beds of dark clay and is commonly lignitic. The Magothy is underlain by the Upper Clay member but where the Upper Clay member has been eroded it is underlain by the Old Bridge Sand. The Formation is not considered an important hydrologic unit because of its small areal extent.

Pleistocene deposits consisting mainly of sand, gravel and clay completely bury the Cretaceous Sediments. The Cape May Formation is the youngest of three formations that subdivide the

Pleistocene deposits of New Jersey and Pennsylvania. These Pleistocene formations are differentiated on the basis of their topographic position. The Cape May Formation occurs chiefly along the Delaware River at an altitude of less than 30 feet above sea level. The Pensauken Formation generally occurs in regions with higher elevations and generally stands between 20 feet below to 120 feet above sea level. Along the Delaware River most of the Pleistocene deposits have been removed by erosion. Brown to gray sand and gravel composed of medium to coarse grained, angular to rounded sand grains of quartz and pebbles of sandstone, siltstone, and chert dominate the Pleistocene deposits. Recent and Pleistocene deposits reach a maximum thickness of approximately 30 feet along the Delaware River.

6.02 Site Hydrogeology

Previous hydrogeologic studies have demonstrated the existence of three water bearing units beneath the site. The three units consist of: the water table aquifer, first confined aquifer, and second confined aquifer.

The water table aquifer directly beneath the Pedricktown facility is of the Cape May Formation and is composed of fine to medium sands with interspersions of silty clay lenses. The saturated thickness of the water table aquifer ranges from fifteen to thirty-five feet. Ground water elevations obtained at the site (Table 7) show ground water mounding and recharge located in the vicinity of the marsh in the middle of the site as discussed further in Secgion 6.03.07. Continuous monitoring suggests that ground water from the water table aquifer is being withdrawn by industrial users located east of the site. This effect is most notable in wells 7 and KD as discussed further in Section 6.03.06. Other water table wells do not appear to be impacted significantly by this pumping. Industrial users are being contacted for information to be included in the RI Report.

The deepest on-site well drilled, 8R, penetrated approximately one hundred feet of the Raritan Formation. Two confined aquifer systems were encountered during drilling, referred to here as the first and second confined aquifers. Split spoon samples indicate that the aquifers were comprised primarily of fine to medium, light-colored sands, interspersed with clays and silts. Separating the aquifers are extensive reddish silty and sandy clay layers. The origin of the Raritan Formation is continental deposition. Facies change are common within the formation and lenses present in one well may not be present in a nearby well. These variabilities can occur both vertically and horizontally.

The first confined aquifer is used as a water supply by industrial users and possibly residences. Water elevations in this aquifer fluctuate considerably with time. In addition, the water level is below sea level by several feet. Available data indicate that pumping wells around the site dictate instantaneous flow directions and rates. Additional information will be obtained for the RI Report.

6.03 Hydrogeologic Field Investigations

6.03.01 General

Hydrogeologic field investigations of the site began in August 1988, after review of previous investigations that were conducted at the site. Two wells were installed in the northeast section of the site, Well #7 and Well #12. These wells provide information as to the horizontal and vertical extent of overburden materials around the site.

Water level elevations obtained in August, October and December 1988 are presented in Table 12. Measurements were made with a battery operated water level probe to the nearest one-hundredth of a foot. These measurements help to better define the hydrology of the site.

To evaluate the continuity of the confining layer and possible communication between the water table and first confined aquifer, ground water levels were monitored at 15 minute intervals in both aquifers for a period of one week in October 1988. Previous data collected (Geraghty & Miller, 1983) indicate that the first confined aquifer is affected by the pumping of nearby industrial wells while the water table aquifer is not. By monitoring ground water levels in wells in both aquifers across the site the continuity of the confining layer can be evaluated. In addition, these measurements provide insight into the possibility of a hydraulic connection between the ground water beneath the site and the Delaware River. If a connection does exist, the ground water of the site would be affected by tidal fluctuations. This is discussed further in Section 6.03.06.

6.03.02 Well Installation

Monitoring Well #7 was installed by advancing an 8-inch outside diameter hollow stem auger to the top of the first confining clay and constructing the well within the augers. The total depth of the boring is approximately 47.5 feet below the ground surface. A ten foot section of .01 inch continuous slot 4-inch PVC screen was placed at the base of the well bore and 4-inch Schedule 40, threaded flush joint PVC riser pipe was extended from the top of the screen to a height of approximately 2 feet above the ground surface. A filter pack consisting of clean silica sand (Moorie #1) was placed around the screened interval to a depth of 35 feet. A bentonite pellet seal was placed over the filter pack to a depth of 32.5 feet. The remainder of the annular space between the inside of the augers and the PVC riser pipe was pressure grouted using a tremie pipe with a cement/bentonite grout. Additional grout was pumped into the annular space to maintain the height of the grout column within the auger flights as they were retracted from the borehole. A steel protective casing was placed in the grout with the base approximately 3 feet below grade and the top extending approximately 2 feet above grade. The protective outer casing was fitted with a locking cap and a cement apron was placed around the base of the well.

Split spoon samples were collected during the installation of Well #7 and Well #12 immediately adjacent to Well #7. The boring logs presented as Appendix A provide information about stratigraphic changes with depth.

Monitoring Well #12 was installed to monitor the first confined aquifer beneath the site. The borehole was drilled using 12-inch outside diameter hollow stem augers. The borehole was advanced into a clay layer which was at a depth of 49 feet. Split spoon samples were collected during the drilling to allow visual characterization of the sediments and to identify the top of the clay layer. Throughout the boring, sand continuously flowed into the borehole. In an attempt to keep the well bore open while the augers were retracted to set the surface casing, the augers were filled with a cement/bentonite mixture to maintain positive hydraulic pressure in the borehole and reduce the inflow of sand. Efforts to install the 8-inch steel surface casing approximately 1 foot into the underlying clay were unsuccessful and the well bore was abandoned.

Mud rotary drilling techniques were then employed to install the 8-inch steel surface casing adjacent to the abandoned boring. The surface casing was installed to 49.5 feet, corresponding to approximately 1 foot into the clay horizon as verified by drill cuttings and drill penetration rates. The surface casing was grouted in place and the grout allowed to cure overnight to properly isolate the shallow water from the confined aquifer.

The well boring was extended into the confined aquifer using an 8-inch roller bit. Drilling mud was circulated to reduce well bore collapse. The borehole was advanced to the top of the second confining clay (75.7 feet). Split spoon samples were collected at selected intervals for visual characterization of the sediments. A well was constructed using 4-inch PVC riser pipe, .01-inch continuous slot screen placed at base of the well with the riser pipe was extended to a height of approximately two feet above the ground surface. A filter pack consisting of Moorie #1 was installed around the screen to a depth of 50.15 feet and was followed by a bentonite seal placed to 47.35 feet. The annular space between the outer and inner casing was then pressure grouted with a cement/bentonite mixture.

The well was fitted with a locking steel casing and cap for protection and a cement apron to divert rainwater was placed around the steel casing.

Detailed well logs depicting the construction of Monitoring Wells #7 and #12 and describing the sediments encountered are presented in Appendix A.

<u>6.03.03 Subsurface Characterization</u>

Split spoon samples collected during the monitoring well installation program indicate that the subsurface material at these locations is dominated by fine to coarse grain sand containing little to no silt. The sand fraction ranges from poorly to well graded and varies in color from brown to gray to white. The low silt content of the majority of the sediments encountered is reflected in the tendency of the sands to flow freely in the well bore. Local but thin lenses of clay were observed during drilling and sampling. Three more distinct clay horizons were observed in the split spoon samples during installation of these wells at depths of approximately 9, 47.5 and 75.7 feet.

The uppermost clay horizon was encountered at approximately 9 feet in the original borehole for Well #12. The horizon may generally be characterized as a gray-brown to green clayey silt or silty clay with a predominance of organic material. (Based on the unified Classification System, this material is represented by the symbol "OL" due to the organic nature of the clay.) Water was observed in the borehole prior to encountering this clay horizon and may represent localized perching of infiltrating water above the water table. Drilling logs do not indicate that this clay was encountered during the installation of Monitoring Wells LD or JD; however, the presence of a gray clay has been noted in other logs for other wells such as CR2. Therefore, the clay does not appear to be continuous across the site nor can a juncture or correlation between the gray clays described in other well logs and this clay horizon be made. Split spoon sampling was at 5 foot intervals at this depth and therefore, it can be concluded that this silty clay zone had a thickness of between two to five feet.

A second clay horizon was encountered at approximately 47.5 feet below the ground surface in the boring for Well #12. This clay is described as being red, white and brown in color and having a mottled appearance and appears layered in some samples. The clay was very stiff and dense. Due to sampling frequency, the horizon is concluded to be between five and ten feet thick in the area, becoming intermixed with sands and silts toward the base. This clay has been noted in the majority of the logs from wells installed on-site, has a very distinguishing appearance and is believed to be continuous across the site. It is, therefore, considered to be the marker used to separate the water table aquifer located above the clay from the first confined aquifer below.

The third clay horizon was encountered at a depth of 75.7 feet in Well #12. Samples were gray to gray white with purple mottling and very stiff texture. A similar clay zone is described in the log from MW 8R2 and is believed to be the continuous confining clay between the first and second confined aquifers on-site. The thickness of the clay horizon could not be determined in the vicinity of Well #12 as the well did not fully penetrate the zone; however, well logs for MW 8R2 indicate a thickness of thirty feet.

6.03.04 Gamma Ray Logging

Following the completion of Well #7 and #12, Well #12 was logged using a GR-81 Gamma-Ray Logging System manufactured by W.G. Keck & Associates, Inc. The unit responds to the natural radioactivity in the form of gamma rays being generated by the sediments. The unit operates within cased or uncased wells and records the total gamma ray count over a selected time interval (time constant function) at selected depths.

The downhole logging device was lowered to the base of the well bore with periodic readings being recorded to determine the optimum range and time constant settings for the actual logging event. Logging proceeded from the base of the boring to the surface with gamma ray counts being recorded every foot within the well bore.

A plot of the gamma ray values recorded at 1 foot depth intervals along with the corresponding stratagraphic unit is presented in Figure 6. This is illustrated in the comparison of radioactivity values and the description of sediments at that depth. The gamma ray plot shows a strong response at a depth corresponding to the first clay zone encountered at a depth of nine feet. Clays or clayey sands typically will exhibit higher radioactivity values than clean sand as a result of clay minerals containing naturally radioactive constituents. The second clay horizon shows a similar gamma ray response although the response peaks being somewhat more subdued and irregular. The more subdued response in the deeper clay horizon is believed to be the effect of a higher organic material content in the shallower clay zone. The more broken response in the second clay horizon is believed to be due to the sandy and/or silty lenses intermixed with the clay. The boring only penetrates the top of the third and deepest clay layer and therefore, the gamma response is limited. The gamma ray values for the base of the borehole appear to be larger than those observed for the second clay zone and equivalent to the response of the uppermost clay.

6.03.05 Pumping Test

On October 18, 1988 a short term pump test was conducted to evaluate if hydraulic communication existed between the upper water table aquifer and the lower first confined aquifer monitored by Well #12.

A centrifugal surface pump was used to pump Well #12 and a 5 psi pressure transducer was set several feet below the water surface in Well #7 to automatically monitor changes in water elevation. The pressure transducer was connected to an Enviro-Labs EL-200/System 17 Groundwater Monitoring System. The instrument was programmed to record changes in water levels (head above the transducer) in Well #7 every five (5) seconds for 2.25 minutes, every 15 seconds for 8 minutes, every 30 seconds for 8 minutes and every minute for 9 minutes while Well #12 was being pumped. A 15 psi pressure transducer was placed in Well #12 following the pump test and water levels were recorded during recovery in both Well #7 and #12. The recovery test was conducted in the same format as the drawdown monitoring test. Well #12 was pumped at a constant rate of 10 gallons per minute.

The water level recovery data for the pumped well (Well #12) and the drawdown and recovery data for the observation well (Well #7) were plotted on semi-logarithmic paper. Using equations developed by Cooper and Jacob (1946), the transmissivity of the aquifer based on the data from Well #12 was calculated. A plot of this data is presented in Figures 7 and 8.

As shown in the Figure 8, the water level in Well #7 appeared to be unaffected by the pumping of Well #12. The data indicate that water levels in Well #7 remain relatively constant, changing only .01 feet for over the first twenty minutes of the pump test. The water level in Well #7 decreases only .03 feet over the last eight minutes of the pump test and continues to decrease during the recovery portion of the test. This suggests that the minor decrease in water level observed in Well #7 during the final minutes of the pumping test are not the result of pumping Well #12.

A transmissivity value of 6,000 gallons per day per foot of draw down was calculated for the first confined aquifer zone based on the drawdown in Well #12. Using an aquifer thickness of approximately twenty-three feet, as indicated by the drilling logs for Well #12, a hydraulic conductivity value of 35.3 feet per day was calculated for the first confined aquifer.

6.03.06 Continuous Ground Water Monitoring

Ground water elevation changes can occur as a result of both natural and man-induced phenomena, each theoretically resulting in a unique trend in water level elevation. For this site, natural phenomena include precipitation, tidal influence and barometric pressure changes. A typical water table response to precipitation results in a relatively smooth, bell-shaped curve on a hydrograph. The initial response is a subtle rise in elevation as a result of direct infiltration. This is followed by a continued water level rise as more regional water recharges the ground water.

Tidal influences usually result in a water level response with a periodic character. A plot of water level measurements would be similar to a sine curve. The time corresponding to maximum and minimum amplitudes should propagate with time, as tidal periods occur at different times each day.

Changes in barometric pressures can cause fluctuations in water level elevation in a well. High pressure periods tend to decrease ground water elevations while a low pressure will increase water levels. Changes in water levels as a result of atmospheric pressure changes should correlate with barometric measurements.

In addition to natural influences, water levels can change in response to site activity. Such influencing factors include ground water pumping, and passing trains.

The pumping of wells may impact site water levels. Water level response may be repetitive if pumping is periodic and should be correlatable to the pumping cycle.

Crossing through the facility area is an active rail line. The weight of a passing train may cause water levels in wells to rapidly rise and fall. If a train entered and remained in the area, the water level should slowly decline as equilibrium is reached.

An Enviro-Labs EL-200/System 17 Ground Water Monitoring System was used to conduct the monitoring program. Two groups of monitoring wells were identified: Group I to be monitored the first week of the program and Group II the second week. Each group contained both water table and first confined wells. Group I wells consisted of Monitoring Wells 9R2, 10, 11, ID, KD, OD, PD, and BR. Group II consisted of Monitoring Wells 9R2, 10, 12, 7, 2R2, 4R, LD, and MD. To monitor water levels a pressure transducer was installed in each well in the group and the recorder was set to collect water levels at 15 minute time intervals. A graph of water level versus time was constructed for each well to evaluate trends in water levels with respect to time. Individual well plots are presented in Appendix B. A discussion of the trends and potential influence sources is presented in the following section.

The hydrographs were evaluated to: 1) identify trends in water levels and the possible sources of influence based on the character of the trend; and 2) identify any trends which indicate hydraulic communication between water table and first confined aquifer.

For each week of water level monitoring, a discussion of the general trends and their potential influence sources is presented.

Water Level Monitoring - Week 1

Group I wells were monitored from October 19 through 26. During that week 1.6 inches of precipitation was recorded on October 22 and .15 inches were recorded on October 24.

Hydrographs for most of the Group I water table wells during the first week of monitoring show an almost immediate increase of 0.4 feet in ground water elevations occurring during the 1.6 inch precipitation event on October 21-22. The first confined Well 10 demonstrated the expected delayed response of less magnitude. Well 9R2 data included several fluctuations which could not be related to precipitation. The precipitation event on October 21-22 may have contributed to some of the ground water elevation increase observed during that time; however, the characteristics of the response suggest additional influences. A second precipitation event was recorded during the latter portion of the week; however, only 0.15 inches of rainfall occurred.

The hydrographs suggest that water levels may have responded to a low pressure system associated with the precipitation event on October 21. However, short term fluctuations in the hydrographs suggest other factors are of more importance in determining hydraulic potential levels in both the confined and unconfined aquifer wells.

There are four tidal changes over a twenty-four hour period of time in the Pedricktown area (two high tides and two low tides) occurring over roughly six hour intervals. In general, the hydrographs do not demonstrate significant tidal impacts on hydraulic potential.

As mentioned, a hydrograph indicating a response to pumping would include a decrease in ground water elevations corresponding to pumping followed by a water elevation rise when the pumping is discontinued. The hydrograph presented for Monitoring Well KD (water table) indicates a sharp decline in water levels occurring mid-day on October 20, 23, 24, and 25. These responses are all similar in duration and magnitude and occur at consistent time intervals. Similar response was observed for water table well 7. Such a critical response may correspond to the periodic pumping of a nearby ground water supply well. The response is not observed on Friday, October 21 or Saturday, October 22, suggesting that the rainfall during that period masked the pumping.

The hydrograph presented for Monitoring Well 10 shows a response of less than 0.2 feet to any natural or man-induced phenomena. Previous investigation had indicated that this well was being affected by the pumping of a nearby industrial supply well. The ground water elevation at this well during October was 5.43 feet below mean sea level indicating ground water usage in the area. In viewing the water level data for this well, it appears as though the pumped well was operated continuously, resulting in a suppressed, but relatively stable ground water elevation in Monitoring Well 10.

The application of a downward load on the subsurface material, such as a heavy weight, can cause ground water elevations in wells to increase due to increase of pressure. If such a load were applied instantaneously for a short duration, the hydrograph may show a sharp increase and decrease in water levels immediately during and after the event. If the load is maintained, the increase in water levels induced by the load should eventually recover to close to normal status conditions as pressure equilibrium is achieved. Hydrographs generated for monitoring wells at the Pedricktown facility may be influenced to some extent by the daily passing of trains through the center of the facility. The data is limited and obviously repetitive trends are not apparent.

Some of the responses observed in the water level data for the seven wells may be the result of electrical surges in the monitoring unit. Of particular note are the similar spiked responses observed in all of the hydrographs on October 23 and 25.

The hydrographs for wells BR, 11 and PD demonstrate coincident increases in water elevation in response to the precipitation event on October 21. In addition, the similarities of the hydrographs suggest that these wells are located within the water table aquifer.

Water level Monitoring - Week 2

Eight wells, five screened in the water table (Wells 2R2, 4R, 7, LD, and MD) and three screened in the first confined (Wells 9R2, 10 and 12) were monitored during the second week of the program.

Precipitation was recorded on November 11 totaling 0.1 inches and November 13 totaling 0.4 inches. The hydrographs do not reflect any response which can be correlated to the November 11 event. The precipitation on November 13 corresponds to a generally increasing trend noted in the hydrograph plots for the water table Wells 7 and LD.

The hydrographs presenting the second week of monitoring data do not show obvious trends which can be explained by changes in barometric pressure. Although small changes in atmospheric pressures may result in fluctuations in ground water elevations, responses observed could not be caused solely by atmospheric pressure changes.

The hydrographs from the second week of monitoring for a number of the monitoring wells display trends that suggest pumping of nearby supply wells is impacting the water table elevations. Water levels in monitoring wells 7 and LD respond in a manner which appears to be the result of a repetitive mid-day pumping event. The maximum water level change observed in Well 7 is 0.8 feet while the maximum change noted in Well LD is generally less than 0.1 feet. This suggests the source of pumping may be closer to monitoring Well 7. A similar response is evident in the data observed during the first week for Well KD. The hydrographs presented for the remaining water table wells (2R2, 4R and MD) do not show water level responses which suggest cyclical pumping.

Hydrographs for the three wells monitoring the first confined aquifer (9R2, 10 and 12) also show water level responses which may be the result of local ground water pumping. Water level responses in Well 12 and 10 are similar. Well 10 shows water level fluctuations on the order of 0.2 feet; believed to be in response to cyclical pumping during the second week of monitoring. No response to cyclical pumping is apparent during the first week of monitoring. The duration of pumping appears to be greater than that observed for the water table wells. Well 9R2 hydrographs indicate cyclical fluctuations in water level which are not consistent with those observed at Well 10 or 12. These data suggest that users are tapping the water table and the first confined aquifer independently.

6.03.07 Ground Water Elevation and Flow

Ground water elevations were obtained in August, October and December 1988 and are presented in Table 12. Measurements were made with a battery operated water level probe to the nearest one-hundredth of a foot. The continuous monitoring data suggests that there are numerous factors affecting ground water flow at the site and that daily flucturations can result in changes in elevation of as much as 0.5 feet. Therefore, interpretation of the ground water elevation and flow is difficult. The data will be interpreted during the preparation of the Remedial Investigation Report to allow the incorporation of accurate information on ground water use within the area.

6.04 Ground Water Sampling and Analysis

On-site monitoring and observation wells and the six off-site private water supply wells that were sampled are listed in Table 13. The ground water sampling procedures utilized in collecting samples from the wells are presented in the Site Operations Plan.

Two on-site monitoring wells were installed prior to commencement of the RI sampling activities. One monitoring well was installed in the water table aquifer (Well 7) and one was installed in the first confined aquifer (Well 12), at the approximate location shown on Figure 3. The water table aquifer well was installed in accordance with the Overburden Monitoring Well Installation Protocol presented in the Site Operations Plan.

The first confined aquifer well was installed in accordance with the Double-Cased Monitoring Well Installation Protocol presented in the Site Operations Plan.

All drilling was conducted by New Jersey State Certified well drillers. Samples of the encountered subsurface materials were collected every 5 feet and/or change in subsurface material or at the direction of the supervising geologist for characterization purposes utilizing ASTM Method D-1586-67/Split Barrel Sampling as specified in the Site Operations Plan.

Permission was obtained to sample six private water supply wells that were located north of the landfill area. Construction details, if available, were obtained from the residents. When permissible, three well volumes were removed before sampling the well. If water treatment is used, the sample was collected from a pre-treatment location if possible.

All wells sampled were analyzed for the following parameters:

Antimony	Lead	Sulfate
Arsenic	Selenium	Gross Alpha & Beta
Cadmium	pH (field)	Total Organic Carbon (TOC)
Chromium	Conductivity (field)	Total Organic Halogen (TOH)
Copper	Chloride	Turbidity (field)

All ground water samples from monitoring and observation wells with a turbidity greater than 5 NTU's (40 CFR 141.3) were field filtered through a 0.45 micron filter prior to heavy metals and radiological analysis. Turbidity results were recorded and are presented with the analytical results (Table 13). Ground water samples from the private water supply wells along State Route No. 130 were not filtered.

Radiological analysis of ground water was conducted on all samples from the on-site monitoring and observations wells previously mentioned. Wells included in the monitoring program were analyzed for gross alpha and gross beta particulate activity. In addition, samples from wells RD and 2R2 were analyzed for radium isotopes, uranium isotopes, thorium isotopes, lead-210, and potassium-40.

6.05 Groundwater Quality

A summary of the results of the site indicator analyses performed is presented in Table 13. Table 14 provides a summary of the priority pollutant metals and cyanide analyses. Radio isotope results can be examined in Table 15.

Examination of the first round of ground water quality analysis suggests that ground water quality has been affected by activities at the site. Additional samples will be collected and analyzed as part of the second phase of the field investigation presented in the approved Work Plan. Because the scope of the second phase is affected by the first round of analyses some preliminary conclusions are presented below.

Heavy metals are present in the ground water at the site at concentrations above the MCL. Lead and cadmium were the most common elevated metals in ground water. The presence of cadmium and lead in the ground water is not unexpected given the open storage of materials with extractable lead and cadmium and the recharge of site run-off to the ground water system in the marsh area.

Some metals were less than detectable or well below the MCL's. These metals included selenium, mercury and thallium. Other metals, such as antimony, arsenic, beryllium, chromium, copper, nickel, and zinc were detected at or above the MCL at a few wells.

The distribution of the elevated metal concentrations suggest that the horizontal extent of contamination on the northern boundary needs better definition. Supplemental wells are proposed in Section 7.

Organic analyses such as TOC and TOX generally indicated little, if any, organic contamination of ground water. Supplemental organic analyses are incorporated at three wells in accordance with approved Work Plan. The scope is presented in Section 7.

Analyses for the anions, sulfate and chloride, support site history information which suggests some migration of battery acids from the manufacturing area. Sulfate concentrations ranged from less than 50 mg/l to 8460 mg/l. Chloride concentrations were much less variable with the maximum reported concentration being 170 mg/l. The sulfate results provide useful indicators for monitoring ground water quality at the site.

Home owner well analyses demonstrated compliance with all MCLs with the exception of pH. Observed differences among wells are likely associated with the different screened intervals used. At one residence, PW3, the initial sample had elevated metal concentrations; however, the duplicate had concentrations similar to the other water supply wells. Sampling personnel indicated that the sample location could not be purged, explaining the presence of copper and lead in this sample.

In summary, ground water quality in the water table aquifer suggests contaminant migration from the manufacturing area to the ground water. The water quality for the first confined aquifer is considerably higher than the water table aquifer; however, measurable differences do exist among the three well locations. Further interpretation of the ground water quality results will be included in the RI Report after two rounds of data have been collected.

PART II

SECTION 7 - FIELD INVESTIGATIONS

7.01 General

The RI/FS Site Operations Plan includes a second site investigation to be performed after the completion of the tasks for the "round one site investigation". The second site investigation will include the collection of ground water and surface water samples. Analyses of the data from the first round investigation has been used in conjunction with the Work Plan to identify investigations to be completed during the second round of investigations.

7.02 Objectives

The purpose of further investigations is to supplement the existing data compiled at the NSNJ site in order to complete the Remedial Investigation/ Feasibility Study.

7.03 Waste Characterization

Based on analyses conducted during the first round, no further sampling is necessary.

7.04 Hydrogeologic Investigation

The ground water sampling procedures to be utilized in collecting samples from the on-site monitoring and observation wells and off-site private water supply wells are present in the Site Operations Plan.

Two additional wells are proposed for the area north of the plant site. These wells are proposed to better evaluate the conditions present in the water table aquifer in the northern portion of the site. The wells will be installed per the procedures previously outlined in the Work Plan and Site Operations Plan.

Based on the results from the ground water analyses of TOC and TOX three wells (11, MD, and SD) have been chosen to be analyzed for priority pollutant organic chemicals. Twenty four water table wells (RD, RS, JD, ID, KS, KD, 4R, MD, 5R, 2R2, 3R, MS, NS, LD, HD, HS, 7, CR2, SD, SS, OD, BR, QS, PD, 11) three of the first confined aquifer wells (9R2, 12, 10), and the private water supply wells sampled during the first round will be sampled during the second round. Analyses to be completed are summarized in Table 16.

7.05 Surface Water Characterization

Additional surface water samples will be collected at the locations indicated on Figure 3. Samples will be analyzed for pH, specific conductivity, lead, sulfate, and chloride. Rainwater will be collected and analyzed for the same parameters as the surface water samples to examine how acid rainfall influences surface water characteristics at the site.

To better define lead distribution in the surface water sediments in areas which receive run-off from the site, surface water sediment samples will be collected in the west stream. Sampling will extend from Pedricktown Road to Route 130, sampling at approximately 250 feet intervals, for a total of twelve samples. Samples will be collected by driving a Lexan tube approximately 18 inches into the sediment in the middle of the stream, capping the tube, and then freezing the sample. The frozen sample will be

SECTION 8 - SITE OPERATION PLAN MODIFICATION

8.01 Sampling Plan

Modification of the Sampling Plan was not deemed necessary.

8.02 Quality Assurance/Quality Control Plan

Modification of the QA/QC Plan was not deemed necessary.

8.03 Health and Safety Plan

Modification of the Health and Safety Plan was not deemed necessary.

8.04 Contingency Plan

Modification of the Contingency Plan was not deemed necessary.

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Tables

O'BRIEN & GERE

Table 1
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	S	001	Lime	Bag		3500	labled: Georgia Comp.; 60-70 bags.
	S	002	Lime	Bag		10000	labled: Warner Comp. "Bell Lime"; 190-200 bags.
	S	003	Gran. Charcoal	Bag		2500	45-50 bags
	S	004	Gran. Charcoal	Bag		500	10 bags
	S	005	Cement	Bag		3000	labled: H-W light weight castable refactory cement; 24-30 bags.
	S	005-02	Cement	Bag		3000	Note in sm. strg. bldg.: H-W lgt wt refactory cement; Amt 24-30 bags.
	S	006	Cement	Drum	0.09	212	labled: A.P. Green; five 3 gal. drums.
	S	007	Saw Dust	Bag		25	60-70 bags.
	S	008	Lime	Bag		3750	labled: G.P. Corp.; 70-80 bags.
	S	009	Sand	Bag		100	20-25 bags.
	S	010	BHB	Drum	0.45	3186	lead oxide, one box 100% full and one box 50% full.
	S	011	Cement	Pail		400	four pails of mortor cement.
	L	012	Petroleum	Drum	0.60		labled: Hydroil Hwy. Medium T23H3-2, two drums of hydrolic fluid.
	S	013	Lime	Drum	0.90	2124	caustic potash, three drums.
	S	014	Lime	Drum	4.80	11327	caustic soda (dry), 16 drums
	S	015	Sodium Nitrate	Bag		11500	110-120 bags.
	S	016	Gran. Charcoal	Drum	0.15	506	oil laden charcoal; one drum 50% full.
	L	017	Paint	Pail	0.03		one pail of no slip floor paint, 100% full.
	L	018	Petroleum	Drum	0.30		labled: Mobil Temp. 78 Grease, 100% full.
	L	019	Petroleum	Drum	0.30		labled: Mobil TAC 77 Open Gear Lude; 100% full.
	L	020	Petroleum	Drum	0.30		labled: Exxon NUTO H-32; one drum; liquid, 100% full.
	S	021	Grout	Bag		300	labled: BC Non-shrink Metallic grouting compound, three bags.
	L	022	Petroleum	Pail	0.03		suspected hydrolic fluid; four pails 100% full. 20W oil
	L	023	Petroleum	Pail	0.12		suspected hydrolic fluid; two pails zero%, four 100% full. 50W oil
	L	024	Petroleum	Drum	0.10		labled: Mobil Oil Delvak Motor Oil 20-20 W; one dr. 33% full.
	L	025	Petroleum	Pail	0.03		liquid degreaser; one pail 100% full.
	L	026	Fungicide	Pail	0.14		labled: ONOX; 24 one gal. containers 100% full.
	S	027	Magnitite	Bag		100	two broken bags.
X	S	028	?	Drum	0.30		one drum 100% full, unknown white globular crystalline solid.
	S	029	Lead Oxide	Drum	0.42	2973	three 35 gal. drums 90% full, Litharge.
	S	030	Arsenic	Pail	0.03	288	Metallic Arsenic; one pail 20% full.
	S	031	BHB	Drum	0.90	6372	lead oxide, three drums 100% full.
	S	032	Coral Bond	Pail		2970	labled: CORAL BOND; 33 pails of solid material 80-100% full.
	S	033	BHB	Drum	1.50	10619	lead oxide, five drums 100% full.
	S	034	Copper Sulfate	Drum	1.00	4248	five drums 100% full.
	S	035	Lead Oxide	Drum	7.00	49557	labled: Litharge, 30-35 drums 100% full, solid.
	S	036	BHB	Box	2.40	405	four boxes of UNUSED bag house bags.
	?	037	OTE BB T5L9-2	Drum	0.30		labled: OTE BB T5L9-2; one drum of an unknown material.
	S	038	Sulfur	Bag		12500	labled: Royla Company; approx. 250 bags 100% full.
	S	039	Chlorine	Drum	0.06	113	labled: HTH; one drum 30% full; solid.
	L	040	Petroleum	Pail	0.00		one drum of cutting fluid 10% full.
	L	041	Petroleum	Drum	0.15		labled: UNIREX No. 2 Grease, one drum 50% full.
	L	042	Petroleum	Drum	0.09		labled: Emerial Oil "Lube Oil Steam", one drum 30% full.
	L	043	Petroleum	Pail	0.05		labled: HALPEN ENGINEERING LIMITED; two 5 gal. grease pails 90% full.
	S	044	Lime	Drum	0.81	1911	three drums 90% full.
	S	045	Cement	Bag		5000	labled: Snow Shoe Company, JH Brant; 50 bags of fire clay mortor 100%.

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Table 1
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

IPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	L	046	Petroleum	Drum	0.27		no identifying marks; one drum 90% full.
	S	047	Dross	Drum	0.15	1517	one decomposed drum 50% full.
	S	048	Dross	Drum	0.30	3034	two drums 100% full.
	S	049	Iron	Pail	0.02	131	one pail of a black powder material 50% full.
	S	050	Iron	Bag		800	labled: Magnifloat; magnitite, iron bearing sub., 8 partially broken bags.
	S	051	BHB	Drum	33.00	233626	lead oxide, 110 drums 100% full.
	S	052	Dross	Drum	0.75	7585	two drums 100% full, one drum 50% full.
	S	053	Dross	Drum	0.55	5563	three decomposed drums of 30%, 50% & 100% full.
X	S	054	Dross(yellow)	Drum	1.20	12136	four drums 100% full.
X	S	055	Dross(yellow)	Drum	0.60	6068	two drums 100% full.
	S	056	Dross(yellow)	Drum	0.30	3034	one drum 100% full.
	S	057	Dross(yellow)	Drum	0.30	3034	four drums 70-100% full.
	S	058	Dross(yellow)	Drum	0.81	8192	three drums 90% full.
	S	059	Dross	Drum	0.90	9102	three drums 100% full.
	S	060	BHB	Drum	19.50	138051	lead oxide, 65 drums 100% full.
	S	061	Dross(yellow)	Drum	0.15	1517	one drum 50% full.
X	S	062	Dross(yellow)	Drum	0.20	2022	unknown granular material; one drum 50% full.
	S	063	Dross	Slag pot	1.00	10114	one pot containing lead material 100% full.
	L	064-1	Water	Lead mold	0.50	843	mold containing water only.
	L	064-2	Water	Lead mold	0.45	759	mold containing 80% water only, on lead train.
	L	064-3	Water	Lead mold	0.45	759	mold containing 80% water only, on lead train.
	L	064-4	Water	Lead mold	0.45	759	mold containing 80% water only, on lead train.
	L	064-5	Water	Lead mold	0.45	759	mold containing 80% water only, on lead train.
	S	065	BHB	Drum	2.10	14868	seven drums of Bag house bags 80-100% full.
	S	066	Iron	Bag		2000	magnitite; one pallet of 25 unbroken bags.
	S	067	Slag	Drum	0.27	1911	one drum 90%.
X	L	068	Water	Tank	0.17	287	contained material to be determined. Cooling tower sump
	S	069	Slag	Lead mold	0.50	3540	unreacted slag in mold.
	L	070-01	Water	Slag pot	0.80	1348	water in pot.
	L	070-02	Water	Slag pot	0.80	1348	water in pot.
	L	070-02	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-03	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-03	Water	Slag pot	0.80	1348	water in pot.
	L	070-04	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-05	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-06	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-07	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-08	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-09	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-10	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-11	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-12	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-13	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-14	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-15	Water	Slag pot	0.80	1348	50% to 100% full

Table 1
(continued)
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	L	070-16	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-17	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-18	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-19	Water	slag pot	0.80	1348	50% to 100% full
	L	070-20	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-21	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-22	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-23	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-24	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-25	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-26	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-27	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-28	Water	Slag pot	0.80	1348	50% to 100% full
	S	071	Slag	Lead mold	0.50	3540	slag in mold 100% full.
	S	072	Lead	Lead mold	0.50	9524	100% full.
	S	073	Dross	Lead mold	0.25	2528	50% full.
	S	074	Slag	Drum	1.68	11894	17 drums 30% full, one lead pot 30% full.
	S	075	Slag	Slag pot	0.50	3540	100% full.
	L	076-01	Petroleum	Drum	0.05		one drum 15% full of a water/gear oil.
	L	076-02	Petroleum	Drum	0.05		one drum 15% full of a water/gear oil.
	L	076-02	Petroleum	Drum	0.30		four drums on edge lube oil.
	L	076-03	Petroleum	Drum	2.70		nine drums, approx. 100% full, lube oil.
X	L	077	Water	Drum	0.27	455	water on top of a soap composition, two drums 100% full.
	S	078	Coke	Drum	0.09	212	30% full.
	S	079	Red Phosphorus	Drum	0.92	2540	four drums 100% full; two drums 30% full.
	S	080	Sodium	Pail	0.18	294	six pails 100% full.
	S	081	Sodium Powder	Drum	0.30	343	one drum 100% full.
	S	082	Lead	Lead mold	7.50	142855	15 molds connected on lead train beneath rotary kiln.
	S	084	Lead Oxide	Tank			Cyclone 1 and Cyclone 2; empty
	L	085	Water	Pail			two buckets of rain water. empty
	S	086-01	Slag	Slag pot	1.00	7080	100% full
	S	086-02	Slag	Slag pot	1.00	7080	100% full
	S	086-03	Slag	Slag pot	1.00	7080	100% full
	S	086-04	Slag	Slag pot	1.00	7080	100% full
	S	086-05	Slag	Slag pot	1.00	7080	100% full
	S	086-06	Slag	Slag pot	1.00	7080	100% full
	S	086-07	Slag	Slag pot	1.00	7080	100% full
	S	086-08	Slag	Slag pot	1.00	7080	100% full
	S	086-09	Slag	Slag pot	1.00	7080	100% full
	S	086-10	Slag	Slag pot	1.00	7080	100% full
	S	086-11	Slag	Slag pot	1.00	7080	100% full
	S	086-12	Slag	Slag pot	1.00	7080	100% full
	S	086-13	Slag	Slag pot	1.00	7080	100% full
	S	086-14	Slag	Slag pot	1.00	7080	100% full
	S	086-15	Slag	Slag pot	1.00	7080	100% full
	S	086-16	Slag	Slag pot	1.00	7080	100% full

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Table 1
(continued)
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	S	086-17	Slag	Slag pot	1.00	7080	100% full
	S	086-18	Slag	Slag pot	1.00	7080	100% full
	S	086-19	Slag	Slag pot	1.00	7080	100% full
	S	086-20	Slag	Slag pot	1.00	7080	100% full
	S	086-21	Slag	Slag pot	1.00	7080	100% full
	S	086-22	Slag	Slag pot	1.00	7080	100% full
	S	086-23	Slag	Slag pot	1.00	7080	100% full
	S	086-24	Slag	Slag pot	1.00	7080	100% full
	S	086-25	Slag	Slag pot	1.00	7080	100% full
	S	086-26	Slag	Slag pot	1.00	7080	100% full
	S	086-27	Slag	Slag pot	1.00	7080	100% full
	S	086-28	Slag	Slag pot	1.00	7080	100% full
	S	086-29	Slag	Slag pot	1.00	7080	100% full
X	S	087-01	Slag	Bulk	1110.00	7858314	"Slag Bldg. Bins".
	S	087-02	Slag	Bulk	0.18	1274	
X	S	087-03	Slag	Bulk	400.00	2831825	"Bin #1".
	S	087-04	Slag	Bulk	1.00	7080	In crusher bldg. on second floor
X	S	087-05	Slag	Bulk	3600.00	25486423	Coke and dross bins
	S	087-06	Slag	Bulk	1020.00	7221153	Battery bin # 5
	S	088	Slag	Bulk	7.40	52389	pile beneath the Kiln Burner Bldg.
	?	089	Slag	Pail	0.08	566	three 5 gal. pails 70%-100% full slag contaminated gravel
	G	090	Acetylene	Cylinder			approx. 80 CF, ?% full.
	G	091	Oxygen	Cylinder			approx. 80 CF, ?% full.
	G	092	Hydrogen	Cylinder			approx. 80 CF, ?% full.
	L	093	Petroleum	Drum	0.60		two drums of 20 WT. motor oil
	L	094	Petroleum	Drum	0.30		one drum of 30 WT. motor oil 100%.
	L	095	Petroleum	Drum	0.60		two drums of 220 ATF., Mobil
	L	096	Petroleum	Drum	0.30		hydralic oil,
X	L	097-01	Water/Oil	Drum	0.09	152	one drum 30% full.
X	L	097-02	Water/Oil	Drum	1.50	2528	five drums 100% full.
X	L	097-03	Water/Oil	Pail	0.03	51	50% full
	S	098	Lead Bearing	Drum	0.30	2124	a decomposed drum containing floor sweeping material.
X	S	099	Molycorp	Pail	0.03		Note in sm. strg. bldg.: 50% full, Union 76 Molycorp.
	?	100	?	Pail	0.02		Note in sm. strg. bldg.: 50% full. Unable to confirm this location
X	S	101	Lead	Pail	0.09	1714	Note in sm. strg. bldg.: three pails 50%-100% full. Lead skimmings
	S	102	Lead Chloride	Pail	0.01	145	Note in sm. strg. bldg.: 100% full, labled "corrosive".
	S	103	Petroleum Coke	Pail	0.12		Note in sm. strg. bldg.: two pails, one box both 100% full. Pemets
	S	104-1	Coke	Pail	0.01	1415	Note in sm. strg. bldg.: 10% full.
	S	104-2	Coke	Pail	0.03	4244	Note in sm. strg. bldg.: 100% full.
	S	105	Sodium Carbonate	Pail	0.02	11	Note in sm. strg. bldg.: 50% full, white in color.
	S	106	Florspar	Pail	0.09		Note in sm. strg. bldg.: three pails 100% full.
	S	107	Sodium Borate	Pail	0.03	78	Note in sm. strg. bldg.: two pails 100% full.
	S	108	Lime	Pail	0.03	71	one pail 100% full.
	S	109	Potassium Carbonate	Pail	0.03	103	Note in sm. strg. bldg.: one pail 100% full.
	S	110	Lead Oxide	Pail	0.03	22	Note in sm. strg. bldg.: one pail 100% full.
	S	111	Lead Oxide	Tank	30.00	148680	tank holding material from the Kiln. (Bag house)

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Table 1
(continued)
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	S	112	Lead Oxide	Bulk			extending from the sweater furnace, vol. TBD. cyclone. empty
	S	113	Lead Oxide	Bulk	20.00	99120	extending from the sweater furnace, vol. TBD. bag house
	S	114	Soda Ash	Tank	220.00	373801	"Soda Ash Silo", LWC 23.4'.
	S	115	Iron	Bulk	0.50	3054	scrap iron, iron hopper
	S	116	Coke	Tank	203.00	479050	"Coke Silo", LWC 27.3'.
X	S	117	Lead Oxide	Bulk	3.70	18336	lead oxide dust. Fuchs
X	S	118	Lead Oxide	Bulk	80.00	566365	area about feed conveyor way, lead bearing scrap, vol. 80 CY.
	S	119	Lead Oxide	Bulk	0.74	5239	spilage from bag house.
	S	120	BHB	Drum	0.42	2973	two drums 70% full, three boxes 100lbs. 90% full.
	S	121	Lime	Bulk	0.30	708	
X	L	122	Water	Trench	74.20	124210	trench drain parallel to Rotary Kiln.
	L	123	Water	Drum	0.03	51	10% full
	S	124	Lead Oxide	Drum	0.60	4248	two drums 100% full, material from Fuchs.
	S	125	Lead Bearing	Drum	1.92	13593	eight drums 70%-100% full.
X	S	126	Lead Bearing	Bulk	74.00	523888	lead feed material.
	S	127	Lead Bearing	Bulk	4.60	32566	lead feed material.
	S	128	Lead Bearing	Bulk	27.80	196812	Lead feed material
X	L	129	Water	Trench	49.50	82863	Thickener tank overflow cleanout ramp.
X	S	129	Lead Oxide	Trench	12.00	59472	Thickner tank over flow clean-out ramp
	S	130	Lead Bearing	Drum	0.30	2124	"Middlings" material, decomposed drum, 100% full.
X	L	131	Water	Tank	0.60	1011	15 CF, liquid layer of CK 131.
	S	131	Lead Oxide	Tank	0.01	50	solid layer of CU 131. decasing
X	S	132	Lead Oxide	Tank	1.40	9911	37 CF, 100% full lead oxide.
X	S	133	Iron Oxide	Tank	1.70	10385	Magnifloat
X	L	134	Water	Tank	1.60	2678	42 CF, adjacent to Kaylay flow meter, 1.2 mRems detected.
X	S	135	Lead Oxide	Tank	8.10	57344	2200 CF, 10% full. Filter drum
X	S	136	Lead Oxide	Tank	2.40	16991	330 CF, 20% full. Spiral Classifier
	S	137	Lead Oxide	Bulk	6.00	42477	Spillings from pellitizer
X	S	138	Dross	Drum	3.00	30341	ten drums containing grid metal and drosses 50%-100% full.
	S	139	Dross	Drum	0.20		four decomposed drums, 70% full.
	L	140	Petroleum	Drum	0.30		two drums 100% full, 80W-90 Mobil Lube.
	L	141	Petroleum	Drum	0.15		one drum 50% full, Exxon Chain Lube.
	L	142	Water	Tank			"Thickener Tank" - empty
	S	142	Lead Oxide	Tank	15.00	106193	"Thickener Tank" solid 1 ft. in thickness..
	S	143	Lead Oxide	Tank	11.63	57634	total depth 37.4 ft., depth to lead oxide 33.4 ft.
	S	144	Lead Bearing	Bulk	1.00	7080	lead bearing scrap.
	S	144-1	Lead Bearing	Drum	0.40	2832	lead bearing scrap, two drums 100% full.
	S	144-2	Lead Bearing	Drum	0.90	6372	3 drums 100% full.
	S	144-3	Lead Bearing	Drum	0.06	425	Note; TD right: one drum 20% full.
	S	145	Dross	Bulk	0.18	1820	One drum 60% full
	S	146	Iron	Bulk	1.00	8731	Iron scrap.
	S	147-1	Lead Bearing	Drum	8.40	59468	aprrox. 28 drums 80%-100% full containing paper materials.
	S	147-2	Lead Bearing	Drum	0.30	2124	paper and tyvek material.
	S	147-3	Lead Bearing	Drum	8.10	57344	27 drums 100% full, paper materials.
	S	147-4	Lead Bearing	Drum	0.30	2124	Note; TD right: one drum 100% full, paper materials.
	S	148	Lead Bearing	Drum	0.24	1699	one drum 80% full, material is black in color (magnitite?).

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Table 1
(continued)
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	S	149	Iron	Bulk	3.00	26194	coal material.
	S	149	Coke	Bulk	1.00	2360	In the area of "Bin #3", Iron dross.
X	L	150	Water	Drum	1.50	2528	Assume 15% of 49 drums in top tier: liquid 70% full.
X	S	151	Lead Bearing	Drum	1.50	10619	Assume 15% of 49 drums in top tier: solid material ?%.
	S	152	Ceramic Glaze	Drum	1.50		Assume 15% of 49 drums in top tier: 100% full. Fired Glaze
	S	153	Paper	Drum	1.00	169	Assume 10% of 49 drums in top tier: paper cups, 70% full.
X	S	154	Lead Bearing	Drum	0.15	1062	?# solid material, 30%-70% full.
	S	155-1	BHB	Drum	2.20	15575	Assume 15% of 49 drums in top tier: ?# drums, BHB 100% full.
	S	155-2	BHB	Drum	0.60	4248	In the area of "Bin #2", two drums 100% full.
	S	156	Air Filters	Drum	1.80		Assume 15% of 49 drums in top tier: 80% full.
	S	157	Furnace Brick	Drum	1.76	7862	Assume 15% of 49 drums in top tier: ?# drums, 80% full.
	S	158	Jar Lids	Drum	0.30		one drum 100% full.
X	S	159	Dross	Drum	0.27	2731	one drum, 80%-100% full.
	S	160	Dross	Drum	0.20	2023	one drum, 70% full.
X	S	161	Dross	Drum	0.20	2023	one drum, 70% full.
	S	162	Cement	Drum	0.30	708	one drum, contained in plastic, 100% full.
X	S	163	Lead Bearing	Drum	2.85	20177	20 drums containing lead hard head material, 30%-50% full.
	S	164	Ash	Drum	0.16		one drum containing an ash-like material, 80% full.
	S	164-1	Lead Bearing	Drum	0.30	2124	one drum containing lead hard head material, 100% full.
	S	164-2	Lead Bearing	Drum	0.21	1487	Note; TD left: one drum containing lead hard head material, 70% full.
	S	164-3	Lead Bearing	Drum	1.89	13380	In the area of "Bin #2", nine drums, lead hard head material, 70% full.
	S	165	Sulfur	Drum	0.20	472	two drum 100% full, "Bee-Beed" material
	S	166	Dross	Drum	0.48	4855	two drums 80% full.
	S	167	Dross	Drum	0.24	2427	one drum 100% full.
X	L	168	Water	Tank	0.05	46	(4) Dross Hoppers: 3-empty, 1-10 gals.
	S	169	Lead Bearing	Drum	0.24	1699	Note; TD left: battery plates, one drum 80% full.
	S	170	Lead Bearing	Drum	78.00	552206	Note; TD left: ~= 260 fiber drums w/ lead scrap & lead oxide, 100% full.
	S	170	Lead Bearing	Drum	0.15	1062	In the area of "Bin #2", one drum, white coke material, 50% full.
X	S	170	Lead Bearing	Drum	54.00	382296	Note; TD right: ~= 180 fiber drums w/ lead scrap & lead oxide, 100% full.
X	S	171-1	Lead Bearing	Bulk	8.00	56636	Note; TD rear: lead scrap
	S	171-1	Lead Bearing	Drum	21.00	148671	Note; TD left: ~= 70 steel drums w/ lead hard head, lead scrap, 100% full.
	S	171-2	Lead Bearing	Bulk	8.00	56636	Note; TD right: lead scrap
	S	171-3	Lead Bearing	Drum	0.06	425	Note; TD right: one drum 20% full.
	S	171-4	Lead Bearing	Drum	0.21	1487	In the area of "Bin #3", one drum 70% full, hard head.
	L	172	Petroleum	Tank	4.44	7484	Hydr. Fluid Tank, adj. hydr. oil tank.
X	S	173	Lead Bearing	Bulk	40.00	283182	Note; TD left: "Mill Scale Bulk".
	L	174	Petroleum	Pail	0.09		Note; TD right: three capped pails of used oil, 100% full.
	S	175	Lead Oxide	Tank	11.39	56498	containing lead oxide, Acid tanks
	S	176	BHB	Bulk	3.00	21239	In front of "Bin #1".
X	L	177	Water	Tank	1.80	3034	approx. vol. 375 GAL. (50 CF).
X	S	177	Lead Oxide	Pit	18.40	130264	approx. slag vol. 6.0 CF, lead oxide vol. 490 CF. acid tank
	S	178	Slag Stone	Bulk	3.00	21239	In the area of "Bin #2".
X	S	179	Hard Rubber	Bulk	60.00		In the area of "Bin #2".
	S	180	Plast.Batt.Case	Drum	0.30		In the area of "Bin #2", one drum 100% full.
	S	181	Dross (red)	Drum	2.70	27307	In the area of "Bin #3", nine drums 100% full, "Hard Pack".
	S	181	Dross (red)	Drum	0.30	3034	In the area of "Bin #4", #?, 100% full, Hard Pack.

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Table 1
(continued)
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
X	S	181	Dross (red)	Bulk	3.60	36409	12 drums in the area of "Bin #3", 100% full
X	S	182	?	Drum	3.30	23363	In the area of "Bin #3", 22 drums 50% full.
X	S	183	Dross (black)	Drum	2.70	27307	In the area of "Bin #3", black color, 10 drums 30%-90% full.
X	S	184	?	Drum	0.20		In the area of "Bin #3", liquid top black solid below, odor, 70% full.
X	S	185	Lead Oxide	Bulk	30.00	212387	In the area of "Bin #3".
	S	186	Slag/Lead Scrap	Bulk	78.00	552206	In the area of "Bin #3".
X	S	187	Dross (yellow)	Drum	0.20	2023	In the area of "Bin #3", one drum yellow dross material, 100% full.
X	S	188	Lead Bearing	Bulk/Drum	100.00	707956	In the area of "Bin #3", hard head, slag drums, lead oxide, scrap mat.
X	S	189	Scrap Wood	Bulk	50.00	8500	In the area of "Bin #3", misc. clean up debris.
	S	190	Lead Bearing	Bulk	30.00	212387	In the area of "Bin #3", piled hard head material.
X	S	191	Lead Bearing	Bulk	200.00	1415912	In the area of "Bin #4", piled hard hard material.
	S	192	Lead Oxide	Tank	2.00	14159	tank, volume 130 gal., only solid present.
	S	193	Lead Bearing	Drum	0.15	743	one drum 50% full.
	S	193	Lead Bearing	Lead mold	0.25	1770	one pot 50% full.
	S	194	Slag	Bulk	5.00	24780	Slag crusher bag house
	L	195	Petroleum	Drum	0.18		three drums 20% full.
X	L	196	Water	Bulk	1336.89	2237953.86	Hoffmans pond. pond of rain water
X	L	197	Water	Tank	3.70	6193.80	Oil water seperator for the fuel station
X	L	198	Water	Tank	8.89	14881.86	Wheel wash station holding tank
X	L	199	Water	Tank	88.89	148801.86	Rain water collected in truck scale
X	L	200	Water	Tank	0.48	803.52	Water in Laboratory Tank
X	L	201	Water	Tank	37.23	62323.02	Shower collection Tank, full
	L	202	Water	Tank	2.90	4854.60	Septic Transfer Tank
X	L	203	Water	Tank	407.40	681987.60	Rain water collected in refining basements
X	L	204	Water	Bulk	185.00	309690.00	Rain collected in truck dock - shipping dock
X	L	205	Water	Bulk	92.75	155263.50	Rain collected in truck cut - recieving dock
X	L	206	Water	Tank	62.96	105395.04	Rain collected in truck dump station - truck lift
X	S	207	Dross(yellow)	Bulk	592.59	4195833.46	Tinny dross in dross bins adjacent to location 87-5
	L	208	Petroleum	Tank	7.92		Two large 25000 gal. White No. 2 fuel tanks lying horizontal
	L	209	Petroleum	Tank			Underground Diesel tank, amount to be determined by S. Holt.
	L	210	Petroleum	Tank			Two adjacent gasoline tanks (1-leaded+1-unleaded) amount to be determined
X	L	211	Petroleum	Tank	1.10		Hydraulic fluid in hydralic drive for shredder
	L	212	Petroleum	Tank	0.18		Hydraulic fluid in portable barrel crusher, next to location #211

Notes:
TBD - To Be Determined.
TD (left or right) - Truck Dump.
BHB - Bag House Bags.
? - material unknown.

Table 2
National Smelting of New Jersey Site
Pedricktown, New Jersey
Contained Liquid Analyses

INVENTORY NUMBER	SAMPLE DATE	SAMPLE NUMBER	pH	LEAD (mg/l)	TOTAL ORGANIC CARBON (mg/l)	GROSS ALPHA (pCi/l)	GROSS BETA (pCi/l)	TOX (ppb)
198	10-4-88	T0432	7.4	0.386	11	< 3	17 +/- 9	<10
196	10-4-88	T0431	6.3	3.39	7	<10	<30	20
200	10-4-88	T0433	6.0	0.407	4			
201	10-4-88	T0434	7.2	1.77	10			
199 (216)	10-4-88	T0441	8.2	0.147	4			
150	10-4-88	T0427	8.1	7.88	1330			
206	10-4-88	T0438	6.2	7.95	7			
177	10-4-88	T0429	7.1	2.64	15			
205	10-4-88	T0437	6.5	3.88	7			
197 (215)	10-4-88	T0440	7.1	0.517	8			
204	10-4-88	T0436	6.4	6.95	2			
68 Dup	10-4-88	T0420	7.5	0.220	6			
122	10-4-88	T0423	6.6	1.62	12			
68	10-4-88	T0419	7.6	0.159	7			
129	10-4-88	T0424	6.5	2.75	9			
211	10-4-88	T0439	6.8	3.45	20			
131	10-4-88	T0425	6.6	9.71	18			
134	10-4-88	T0426	8.7	14.5	107	<40	240+/-80	33
203	10-4-88	T0435	7.5	2.89	9	<50	28+/-12	<10
168	10-4-88	T0428	5.2	5.90	<1			
97	10-4-88	T0422	7.5	0.147	24			
77	10-4-88	T0421	8.4	3.47	1720			
Rinse Blank	10-3-88	T0442	--	0.169				
Rinse Blank	10-4-88	T0443	--	<0.005				
Rinse Blank	10-4-88	T0444	--	<0.005				

Table 3
National Smelting of New Jersey Site
Pedricktown, New Jersey
Containerized Solids Analyses

INVENTORY NUMBER	MATERIAL TYPE	SAMPLE I.D.	LEAD (mg/kg)
28	?	T0379	13
101	Lead	T0387	538000
117	Lead oxide	T0388	237000
118	Lead oxide	T0389	240000
126	Lead bearing	T0390	176000
129	Lead oxide	T0491	181000
132	Lead oxide	T0392	239000
133	Iron oxide	T0393	216000
135	Lead oxide	T0394	428000
136	Lead oxide	T0395	283000
138	Dross	T0396	280000
171-1	Lead bearing	T0403	227000
173	Lead bearing	T0404	826
177	Lead oxide	T0405	205000
179	Lead oxide	T0406	144000
185	Lead oxide	T0411	194000
188	Lead bearing	T0413	200000
189	Scrap wood/pile	T0414	370000
191	Lead bearing	T0415	492000
87-1	Slag	T0383	89000
87-3	Slag	T0384	65000
87-5	Slag	T0385	119000
177 Dup	Lead oxide	T0418	268000

Table 3
National Smelting of New Jersey Site
Pedricktown, New Jersey
Containerized Solids Analyses

INVENTORY NUMBER	MATERIAL TYPE	SAMPLE I.D.	LEAD (mg/kg)
28	?	T0379	13
101	Lead	T0387	538000
117	Lead oxide	T0388	237000
118	Lead oxide	T0389	240000
126	Lead bearing	T0390	176000
129	Lead oxide	T0491	181000
132	Lead oxide	T0392	239000
133	Iron oxide	T0393	216000
135	Lead oxide	T0394	428000
136	Lead oxide	T0395	283000
138	Dross	T0396	280000
171-1	Lead bearing	T0403	227000
173	Lead bearing	T0404	826
177	Lead oxide	T0405	205000
179	Lead oxide	T0406	144000
185	Lead oxide	T0411	194000
188	Lead bearing	T0413	200000
189	Scrap wood/pile	T0414	370000
191	Lead bearing	T0415	492000
87-1	Slag	T0383	89000
87-3	Slag	T0384	65000
87-5	Slag	T0385	119000
177 Dup	Lead oxide	T0418	268000

Table 4
National Smelting of New Jersey Site
Pedricktown, New Jersey
Containerized Solids Total Metal Analyses

INVENTORY NUMBER	MATERIAL TYPE	SAMPLE I.D.	ARSENIC (mg/kg)	CADMIUM (mg/kg)	CHROMIUM (mg/kg)	COPPER (mg/kg)	LEAD (mg/kg)	ANTIMONY (mg/kg)	SELENIUM (mg/kg)	TIN (mg/kg)	ZINC (mg/kg)
54	Dross (yellow)	T0380	4420	53	<5	760	282000	9660	<100	4250	19
55	Dross (yellow)	T0381	798	268	<5	890	392000	9260	114	10600	400
62	Dross (brown)	T0382	814	4	338	1910	77900	2290	<100	1740	3840
99	Molycorp	T0386	987	<1	38	284	51000	91	342	185	106
151	Lead bearing	T0397	302	<1	<5	11	238000	37	<100	<80	36
154	Lead bearing	T0398	228	<1	<5	11	173000	40	<100	<80	12
159	Dross	T0399	<100	<1	<5	26	6430	<20	<100	<80	61
161	Dross	T0400	654	<1	<5	7	524000	47	132	104	38
163	Lead bearing	T0401	536	<1	416	139	383000	23	110	83	314
170	Lead bearing	T0402	331	<1	<5	<2	250000	26	<100	<80	3
181	Dross (red)	T0407	659	76	<5	649	251000	11000	<100	668	368
182	?	T0408	282	<1	<5	9	215000	28	<100	<80	16
183	Dross (black)	T0409	155	2	<5	58	106000	26	<100	<80	54
184	?	T0410	267	<1	<5	13	199000	<20	<100	<80	29
187	Dross (yellow)	T0412	1070	<1	<5	2	815000	44	216	157	4
207	Dross (yellow)	T0416	<200	264	92	6260	27400	556	<200	2520	6590

NOTE: All values reported as mg/kg (ppm) on a dry weight basis

100092

Table 5
National Smelting of New Jersey Site
Pedricktown, New Jersey
Slag EP Toxicity Analyses

Inventory Number	87-1	87-3	87-5	87-1(Dup.)
Sample date	10-4-88	10-3-88	10-3-88	10-4-88
Sample Number	T0445	T0446	T0447	T0417
Silver	<0.5	<0.5	<0.5	<0.5
Arsenic	<0.5	<0.5	<0.5	<0.5
Barium	<10.0	<10.0	<10.0	<10.0
Cadmium	1.5	1.0	0.5	1.8
Chromium	<0.5	<0.5	<0.5	<0.5
Mercury	<0.0005	0.0014	<0.0005	0.001
Lead	30.0	2.1	3.2	2.0
Selenium	<0.1	<0.1	<0.1	<0.1

NOTE: All values reported as mg/l in leachate

Table 6
NL Industries, Inc.
National Smelting of New Jersey Site
Pedricktown, NJ
Marsh Sediment Analyses

Sample ID	Sample Type	Coordinates Horiz.-Vert.	Sample Date	Laboratory Number	Lead concentration mg/kg dry weight
301	marsh	8675-8575	9-13-88	T0086	104
302	marsh	8930-8630	9-12-88	T0088	44.2
303	marsh	8915-8750	9-13-88	T0089	72.1
304	marsh	8800-8855	9-12-88	T0087	238
305	marsh	9020-8880	9-13-88	T0090	367
306	marsh	9020-8960	9-13-88	T0091	845
307	marsh	8875-8960	9-13-88	T0092	119
308	marsh	9040-9140	9-13-88	T0093	1190
308	marsh dup	9040-9140	9-12-88	T0094	480

Table 7
National Smelting of New Jersey Site
Pedricktown, NJ
Surface Water and Sediments Analyses

SAMPLE ID	LOCATION ID	SAMPLE DATE	SAMPLE TYPE	FLOW STATE	COORDINATES (Horiz.-Vert.)	pH	LEAD (mg/l)
T0043	401	8/19/88	water	low	8620-10070	6.00	0.098
T0043	401	8/19/88	water	low	8620-10070	N/A	0.114
T0044	402	8/19/88	water	low	8760-9135	4.00	1.240
T0045	403	8/19/88	water	low	7850-8730	4.00	0.263
T0046	405	8/19/88	water	low	9670-8350	5.50	0.025
T0047	406	8/19/88	water	low	8670-7870	6.00	0.011
T0138	401	9/13/88	water	high	8620-10070	5.30	0.1
T0124	402	9/13/88	water	high	8760-9135	3.40	1.06
T0136	403	9/13/88	water	high	7850-8730	3.30	0.088
T0126	404	9/13/88	water	high	8465-8995	3.00	2.18
T0134	405	9/13/88	water	high	9670-8350	3.60	0.021
T0132	406	9/13/88	water	high	8670-7870	6.40	0.0117
T0103	408	9/13/88	water	high	9085-8760	3.50	3
T0101	409	9/13/88	water	high	8870-8755	3.40	1.98
T0099	411	9/13/88	water	high	8580-8850	4.30	0.0232
[illegible]39	801	9-13-88	sediment		8620-10070		817
T0125	802	9-13-88	sediment		8760-9135		1640
T0137	803	9-13-88	sediment		7850-8730		3060
T0127	804	9-13-88	sediment		8465-8995		702
T0135	805	9-13-88	sediment		9670-8350		4350
T0133	806	9-13-88	sediment		8670-7870		<5
T0102	808	9-13-88	sediment		9085-8760		286
T0100	809	9-13-88	sediment		8870-8755		552
T0098	811	9-13-88	sediment		8580-8850		77.5

Table 9
NL Industries, Inc.
National Smelting of New Jersey Site
Pedricktown, NJ
Soil Analysis

Sample ID	Sample Type	Coordinates Horiz.-Vert.	Sample Date	Laboratory Number	Sample Depth(in)	Lead concentration mg/kg dry weight
201	on-site	8520-8130	9-12-88	T0050	0-3	21
			9-12-88	T0051	3-6	12
202	on-site	8470-8350	9-12-88	T0054	0-3	19
			9-12-88	T0055	3-6	15
203	on-site	8700-8360	9-12-88	T0058	0-3	25
			9-12-88	T0059	3-6	16
204	on-site	8930-8370	9-14-88	T0185	0-3	153
			9-14-88	T0186	3-6	45
205	on-site	8580-8540	9-14-88	T0062	0-3	29
			9-14-88	T0063	3-6	18
206	on-site	8820-8540	9-14-88	T0181	0-3	60
			9-14-88	T0182	3-6	30
207	on-site	9040-8560	9-14-88	T0189	0-3	100
			9-14-88	T0190	3-6	26
208	on-site	8470-8730	9-12-88	T0066	0-3	22
			9-12-88	T0067	3-6	16
209	on-site	9150-8770	9-14-88	T0173	0-3	634
			9-14-88	T0174	3-6	756
			9-14-88	T0175	6-12	131
			9-14-88	T0176	12-18	83
210	on-site	8560-8920	9-12-88	T0070	0-3	33
			9-12-88	T0071	3-6	25
211	on-site	9290-8800	9-14-88	T0169	0-3	7500
			9-14-88	T0170	3-6	5910
			9-14-88	T0171	6-12	5320
			9-14-88	T0172	12-18	1820
212	on-site	8470-9120	9-13-88	T0128	0-3	333
			9-13-88	T0129	3-6	172
			9-13-88	T0130	6-12	68
			9-13-88	T0131	12-18	34
213	on-site	8665-9150	9-12-88	T0074	0-3	1800
			9-12-88	T0075	3-6	2040
			9-12-88	T0076	6-12	1040
			9-12-88	T0077	12-18	541
214	on-site	8900-9160	9-14-88	T0140	0-3	572
			9-14-88	T0141	3-6	120
215	on-site	8550-9320	9-14-88	T0193	0-3	1730
			9-14-88	T0194	3-6	383
			9-14-88	T0195	6-12	39
			9-14-88	T0196	12-18	28

Table 9
(continued)
NL Industries, Inc.
National Smelting of New Jersey Site
Pedricktown, NJ
Soil Analysis

Sample ID	Sample Type	Coordinates Horiz.-Vert.	Sample Date	Laboratory Number	Sample Depth(in)	Lead concentration mg/kg dry weight
216	on-site	9000-9370	9-14-88	T0144	0-3	2080
			9-14-88	T0145	3-6	165
217	on-site	9470-9400	9-14-88	T0165	0-3	12700
			9-14-88	T0166	3-6	12300
			9-14-88	T0167	6-12	6880
218	on-site	8650-9540	9-14-88	T0197	0-3	9340
			9-14-88	T0198	3-6	1620
			9-14-88	T0199	6-12	4370
			9-14-88	T0200	12-18	954
219	on-site	8880-9550	9-14-88	T0149	0-3	740
			9-14-88	T0150	3-6	99
220	on-site	9570-9610	9-14-88	T0161	0-3	3590
			9-14-88	T0162	3-6	2840
			9-14-88	T0163	6-12	3220
			9-14-88	T0164	12-18	792
221	on-site	8740-9750	9-14-88	T0153	0-3	1580
			9-14-88	T0154	3-6	793
			9-14-88	T0155	6-12	117
			9-14-88	T0156	12-18	49
222	on-site	9440-9790	9-14-88	T0157	0-3	4610
			9-14-88	T0158	3-6	226
			9-14-88	T0159	6-12	84
			9-14-88	T0160	12-18	152
223	on-site	9790-9860	9-14-88	T0177	0-3	1220
			9-14-88	T0178	3-6	170
			9-14-88	T0179	6-12	56
			9-14-88	T0180	12-18	20

Table 10
NL Industries, Inc.
National Smelting of New Jersey Site
Pedricktown, NJ
Soil Analysis

Sample ID	Sample Type	Coordinates Horiz.-Vert.	Sample Date	Laboratory Number	Sample Depth(in)	Lead concentration mg/kg dry weight
1	off-site	8930-6750	9-16-88	T0371	0-3	22.8
			9-16-88	T0372	3-6	12.9
1	off-site dup	8920-6750	9-16-88	T0375	0-3	31.2
			9-16-88	T0376	3-6	11.5
2	off-site	9840-6560	9-16-88	T0367	0-3	58.6
			9-16-88	T0368	3-6	24.6
3	off-site	9340-7380	9-16-88	T0359	0-3	35.7
			9-16-88	T0360	3-6	29.7
4	off-site	10270-7440	9-16-88	T0363	0-3	89
			9-16-88	T0364	3-6	23.1
5	off-site	9100-7760	9-16-88	T0355	0-3	55.4
			9-16-88	T0356	3-6	13.4
6	off-site	8660-7830	9-15-88	T0289	0-3	538
			9-15-88	T0290	3-6	88.8
			9-15-88	T0291	6-12	44.4
			9-15-88	T0292	12-18	25
7	off-site	8800-8110	9-15-88	T0285	0-3	685
			9-15-88	T0286	3-6	215
			9-15-88	T0287	6-12	133
			9-15-88	T0288	12-18	21.5
8	off-site	9320-8230	9-15-88	T0281	0-3	121
			9-15-88	T0282	3-6	41.5
9	off-site	8200-6850	9-15-88	T0309	0-3	48.4
			9-15-88	T0310	3-6	23.1
10	off-site	8450-7260	9-15-88	T0305	0-3	26.6
			9-15-88	T0306	3-6	27.8
11	off-site	7640-7430	9-15-88	T0245	0-3	57.9
			9-15-88	T0246	3-6	43.3
11	off-site dup	7640-7430	9-15-88	T0249	0-3	54.4
			9-15-88	T0250	3-6	42.5
12	off-site	7010-8000	9-15-88	T0233	0-3	72.9
			9-15-88	T0234	3-6	28.4
13	off-site	7890-8050	9-15-88	T0317	0-3	32.3
			9-15-88	T0318	3-6	28.2
14	off-site	6800-8660	9-15-88	T0229	0-3	26.8
			9-15-88	T0230	3-6	26.4
15	off-site	7400-8890	9-12-88	T0078	0-3	32.6
			9-12-88	T0079	3-6	33.1
16	off-site	7815-8870	9-12-88	T0082	0-3	130
			9-12-88	T0083	3-6	21
17	off-site	8065-9300	9-15-88	T0213	0-3	175
			9-15-88	T0214	3-6	44.5
18	off-site	8250-8900	9-15-88	T0321	0-3	46
			9-15-88	T0322	3-6	29.2
19	off-site	8110-8500	9-15-88	T0329	0-3	45.3
			9-15-88	T0330	3-6	29.5

Table 10
(continued)
NL Industries, Inc.
National Smelting of New Jersey Site
Pedricktown, NJ
Soil Analysis

Sample ID	Sample Type	Coordinates Horiz.-Vert.	Sample Date	Laboratory Number	Sample Depth(in)	Lead concentration mg/kg dry weight
41	off-site	10170-9830	9-15-88	T0269	0-3	145
			9-15-88	T0270	3-6	134
42	off-site	9920-9410	9-15-88	T0261	0-3	175
			9-15-88	T0262	3-6	167
43	off-site	9710-8970	9-15-88	T0257	0-3	221
			9-15-88	T0258	3-6	199
44	off-site	10325-9010	9-15-88	T0265	0-3	1770
			9-15-88	T0266	3-6	833
45	off-site	10665-8250	9-15-88	T0253	0-3	108
			9-15-88	T0254	3-6	37
46	off-site	10050-8200	9-15-88	T0277	0-3	87
			9-15-88	T0278	3-6	25
47	off-site	9520-8570	9-15-88	T0313	0-3	457
			9-15-88	T0314	3-6	382
			9-15-88	T0315	6-12	55.4
			9-15-88	T0316	12-18	19.2
48	off-site	10800-5600	9-15-88	T0301	0-3	26
			9-15-88	T0302	3-6	35
49	off-site	11630-8100	9-15-88	T0297	0-3	25
			9-15-88	T0298	3-6	28
50	off-site	13020-10120	9-15-88	T0293	0-3	34
			9-15-88	T0294	3-6	29

TABLE 11

System	Series	Formation and member	Symbol	Maximum Thickness (feet)	Physical character	Water-bearing character
Quaternary	Recent	Alluvium	Qal	72	Flood plain and channel deposits of clay, silt, sand, and some gravel.	Not important as a source of grou water: generally less perme than underlying deposits: impe the movement of water into a out of surface streams.
		- - - *Unconformity* - - -				
	Pleistocene	Cape May formation (Illinoian)	Qcm	80	Chiefly gray and brown sand and gravel: some silt: little clay. Cape May unweathered. Pensauken deeply weathered.	An important source of ground wa in southeast Bucks County. Co tains highly permeable sand a gravel beds which yield lar quantities of water to wells. Fa orably situated with respect recharge: subject to surface co tamination.
		- - - *Unconformity* - - -				
		Pensauken formation (Illinoian)	Qp			
		- - - *Unconformity* - - -				
Cretaceous	Upper Cretaceous	Magothy formation	Km	10	Medium to coarse gray sand with plant remains.	Unimportant as a source of wat in Pennsylvania owing to its sma aerial extent.
		- - - *Unconformity* - - -				
		Upper clay member	Kru	35	Chiefly red, white, gray, and yellow clay. Also brown and blue clay: silty, sandy, and pebbly in places.	Acts chiefly as a confining bed.
		- - - *Unconformity* - - -				
		Raritan formation: Old Bridge sand member	Kro	55	Chiefly brown, gray, white, and yellow sand with some gravel: contains some clay and silt in Bucks County.	An excellent aquifer: forms an ex tensive water table aquifer inter connected with the Pleistocen sediments. Generally not tappe by wells in areas where it occur beneath an upper confining bed.
		- *Unconformity* - - -				
		Raritan formation: Middle clay member	Krm	60	Chiefly red and white clay: also gray, yellow, blue, and brown clay: sandy in places.	An extensive confining bed.
		- *Unconformity* - - -				
		Raritan formation: Sayreville sand member	Krs	49	Chiefly brown, yellow, white, and gray sand and gravel: little clay.	Generally not tapped by wells. Potentially an important aquifer in Bucks County.
		- *Unconformity* - - -				
		Raritan formation: Lower clay member	Krl	61	Chiefly red clay, also gray, blue, white, and brown clay: sandy in places.	An extensive confining bed.
		- *Unconformity* - - -				
		Raritan formation: Farrington sand member	Krf	87	White, yellow, gray, and brown sand and gravel: some white clay.	The principal source of ground water in the Philadelphia area: average permeability 1,000 gpd per sq. ft. as determined by pumping tests. Yields from 500 to 1,000 gpm to wells in South Philadelphia.
		- *Unconformity* - - -				
Pre-Cretaceous	Glenarm	Crystalline rocks	p	?	Mica schist capped by residual weathered clay.	Poor aquifer in the Coastal Plain area: contains some ground water in secondary fractures: average yield less than 50 gpm.

ɔdified from Greenman, 1961

Table 12
National Smelting of New Jersey Site
Pedricktown, NJ
Ground Water Elevations

WELL ID	LENGTH OF SCREENS	TOP OF CASING	WELL DEPTH	8/15/88 WATER MSL	10/27/88 WATER MSL	12/23/88 WATER MSL
1R	28.00	13.32	32.00		4.06	4.81
2R2	7.00	9.14	22.10	1.90	1.72	2.48
3R	29.00	14.10	34.79	2.70	2.20	3.20
4R	12.00	14.80	23.89	3.31	2.70	3.61
5R	9.00	10.03	18.96	3.27	3.28	3.89
6	10.00	12.23	23.50		3.81	3.82
7	10.00	11.10	49.38	-0.39	-1.15	-0.55
8R	7.00	16.55	110.90		-15.45	-15.04
9R2	8.00	16.73	67.70	-6.43	-8.07	-7.72
10	30.00	13.72	72.42	-4.24	-5.43	-5.15
11	20.00	9.25	53.99	4.00	3.85	4.39
12	20.00	10.87	78.18	-3.99	-5.23	-4.96
AR	30.00	11.39	35.00			
BR	6.00	8.88	38.85	3.84	3.53	4.05
CR2	6.00	15.96	33.55	3.43	1.68	2.70
HD	15.00	16.73	41.50	3.54	1.98	2.79
HS	15.00	16.83	26.44	3.54	1.93	2.77
ID	25.00	15.24	35.41	4.87	3.46	4.44
IS	10.00	15.41	15.50			6.77
JD	10.00	12.08	27.44	4.62	3.63	4.63
JS	10.00	11.95	17.00		3.60	4.59
KD	10.00	10.70	27.47	4.55	3.69	4.60
KS	10.00	10.51	17.78	4.62	0.76	4.67
LD	7.00	10.89	18.71	3.26	2.64	3.98
LS	7.00	10.74	13.05		2.99	4.35
MD	8.00	8.37	19.69	2.08	1.85	2.76
MS	7.00	9.83	12.11	3.40	1.88	2.78
ND	10.00	10.35	24.20	3.10	2.90	3.61
NS	10.00	11.30	16.85	2.95	2.92	3.72
OD	25.00	11.44	37.15	3.46	3.39	3.93
PD	10.00	10.92	29.75	4.49	4.15	4.68
PS	10.00	10.25	21.11		4.60	5.14
QD	10.00	9.14	22.95			
QS	10.00	10.19	15.73	3.70	3.49	4.27
RD	10.00	13.62	36.03	3.75	2.39	3.99
RS	15.00	13.84	22.00		5.39	6.10
SD	12.00	11.45	28.96	4.24	3.60	4.08
SS	10.00	10.76	16.77	4.52	3.65	4.41

Table 13
National Smelting of New Jersey Site
Pedricktown, NJ
Ground Water Quality Analyses - Site Indicators

SAMPLE ID	WELL ID	SAMPLE DATE	TURBIDITY (NTU)	FILTERED	ANTIMONY (mg/l)	ARSENIC (mg/l)	CADMIUM (mg/l)	CHROMIUM (mg/l)	COPPER (mg/l)	LEAD (mg/l)	SELENIUM (mg/l)	TOC (mg/l)	TOX (ppb)	SO_4 (mg/l)	CHLORIDE (mg/l)	pH	CONDUCTIVITY (umho/cm)
T0006	10	8/16/88	>90	*	<0.003	<0.001	0.045	0.010	0.028	0.012	<0.02	10	<10	284	5	4.9	550
T0003	11	8/15/88	53	*	<0.003	0.030	0.134	0.005	0.042	0.006	<0.02	22	1750	2760	170	5.2	4500
T0011	12	8/16/88	13	*	<0.03	0.002	<0.001	0.001	<0.020	0.027	<0.002	1	<10	4	3	8.0	5.2
T0012	2R2	8/17/88	>90	*	<0.03	0.430	0.002	0.008	<0.020	0.004	<0.02	116	32.5	3340	150	6.6	5500
T0009	3R	8/16/88	3	*	<0.03	<0.001	0.012	0.002	<0.020	0.010	<0.02	3	<10	147	<1	3.6	260
T0007	4R	8/16/88	20	*	<0.003	0.001	0.047	0.013	<0.020	0.031	<0.02	8	26.5	553	5	4.4	900
T0008	5R	8/16/88	45	*	<0.03	0.001	<0.001	0.012	<0.02	0.01	<0.02	60	13	283	31	4.3	800
T0010	7	8/16/88	12	*	<0.03	<0.001	0.031	0.014	0.113	0.008	<0.02	7	<10	647	7	4.2	1000
T0032	9R2	8/18/88	45	*	<0.003	<0.001	<0.001	0.003	<0.020	0.003	<0.002	3	<10	3	<1	4.7	80
T0004	BR	8/16/88	1.5		<0.003	<0.001	0.015	0.002	0.039	0.018	<0.02	6	<10	1100	59	5.7	2000
T0016	CR2	8/15/88	>90	*	<0.003	<0.001	<0.001	0.010	<0.020	0.028	<0.002	7	<10	4	<1	5.7	110
T0040	HD	8/19/88	10	*	0.005	0.003	0.064	0.013	0.040	0.079	<0.02	9	27	1140	18	4.2	265
T0041	HS	8/19/88	>90	*	0.122	0.002	0.010	0.003	0.024	6.290	<0.002	12	15	84	3	3.8	300
T0025	ID	8/18/88	12	*	<0.003	<0.001	0.004	0.001	<0.020	0.026	<0.02	1	<10	54	<1	3.4	170
T0024	JD	8/15/88	44	*	<0.03	0.001	0.103	0.027	0.143	0.014	<0.02	8	15	741	5	4.0	510
T0022	KD	8/18/88	>90	*	<0.03	<0.01	0.291	0.246	0.513	0.061	<0.02	8	61	8460	110	2.5	12,000
T0023	KS	8/18/88	>90	*	<0.03	<0.01	0.173	0.060	0.219	3.130	<0.02	28	27.5	3070	57	2.9	5000
T0013	LD	8/17/88	>5	*	<0.03	0.002	0.002	0.011	<0.020	0.044	<0.02	18	<10	170	<1	4.0	340
T0028	MD	8/18/88	>90	*	<0.003	0.011	0.008	0.005	<0.020	0.002	<0.02	23	99.5	1730	140	5.7	4000
T0029	MS	8/18/88	46	*	<0.003	<0.001	0.011	0.004	<0.020	0.198	<0.02	14	29	321	5	4.0	700
T0034	ND	8/19/88	22	*	<0.03	0.001	0.008	0.012	0.068	0.064	<0.02	38	58	1580	45	3.4	270
T0037	NS	8/19/88	19	*	<0.03	<0.001	0.009	0.013	<0.020	0.045	<0.02	15	97.5	367	3	3.6	710
T0036	OD	8/17/88	49	*	<0.03	0.002	0.002	0.045	<0.020	0.030	<0.02	56	46	5630	48	4.0	10,000
T0001	PD	8/15/88	20	*	<0.003	0.017	0.001	0.002	<0.020	0.039	<0.02	11	81.5	1140	100	5.6	2300
T0020	PW2	8/17/88	N/A		<0.003	<0.001	<0.001	0.011	<0.020	0.022	<0.002	5	<10	27	43	6.0	210
T0018	PW3	8/17/88	N/A		<0.003	0.002	<0.001	0.009	0.253	0.117	<0.002	<1	N/A	4	12	5.5	135
T0019	PW3-DUP	8/17/88	N/A		<0.003	0.003	<0.001	0.005	0.056	0.006	<0.002	4	<10	6	11	N/A	N/A
T0014	PW4	8/17/88	N/A		<0.003	0.006	<0.001	0.013	<0.020	0.002	<0.002	5	<10	9.8	9	5.5	140
T0015	PW6	8/17/88	N/A		<0.003	<0.001	<0.001	0.012	0.057	0.008	<0.02	2	<10	27	15	5.4	170
T0031	PW7	8/18/88	N/A		<0.003	0.003	<0.001	0.007	<0.020	0.005	<0.02	5	<10	35	25	4.8	235
T0030	PW9	8/18/88	N/A		<0.003	0.002	0.003	0.011	0.045	0.004	<0.002	3	20.5	85	49	4.7	600
T0035	QS	8/19/88	26	*	<0.003	0.002	0.007	0.003	<0.020	0.090	<0.002	54	40	328	<1	4.2	335
T0005	RB-BR	8/16/88	N/A		<0.003	0.002	<0.001	0.001	<0.020	0.004	<0.002	8	<10	25	21	N/A	N/A
T0017	RB-CR2	8/15/88	N/A		<0.003	<0.001	<0.001	0.014	<0.020	0.003	<0.002	3	<10	28.3	19	N/A	N/A
T0021	RB-KD	8/18/88	N/A		<0.003	0.001	<0.001	0.011	<0.020	0.002	<0.002	1	<10	28	21	N/A	N/A
T0033	RB-ND	8/19/88	N/A	*	<0.003	0.003	<0.001	0.002	<0.020	0.002	<0.002	3	<10	25	23	N/A	N/A
T0002	RB-PD	8/15/88	N/A	*	<0.003	0.002	<0.001	0.001	<0.020	0.007	0.004	7	<10	23	21	N/A	N/A
T0026	RD	8/17/88	>90	*	<0.003	<0.001	<0.001	0.003	<0.020	0.004	0.004	4	<10	46	6	5.0	200
T0038	SD	8/19/88	>90	*	<0.03	<0.01	1.01	3.250	3.84	0.294	<0.02	N/A	235	N/A	N/A	3.7	20,000
T0039	SS	8/19/88	81	*	<0.03	0.020	0.119	0.021	0.011	0.086	<0.02	91	73	1090	92	4.1	3800

NOTE: N/A - Not Analyzed
RB - Rinse Blank
DUP - Duplicate Sample

100102

Table 14
Ground Water Quality Analyses
Inorganic Priority Pollutants
National Smelting of New Jersey Site
Pedricktown, NJ

Well ID	11	JD	ID	SD	QS	
Description	T0003	T0024	T0025	T0038	T0035	Blank
Date	8/15/88	8/18/88	8/18/88	8/19/88	8/19/88	8/17/88
Silver	<0.01	<0.01	<0.01	0.044	<0.01	<0.01
Arsenic	0.03	0.001	<0.001	<0.01	0.002	0.002
Beryllium	0.003	0.007	0.003	0.156	0.003	0.003
Cadmium	0.134	0.103	0.004	1.01	0.007	0.001
Chromium	0.005	0.027	0.001	3.25	0.003	0.01
Copper	0.042	0.143	<0.02	3.84	<0.02	<0.02
Mercury	<0.0002	<0.0002	0.0006	0.0003	<0.0002	<0.0002
Nickel	0.063	0.099	<0.04	1.93	<0.04	<0.04
Lead	0.006	0.014	0.026	0.294	0.090	0.001
Antimony	<0.003	<0.03	<0.003	<0.03	<0.003	<0.03
Selenium	<0.02	<0.02	<0.02	<0.02	<0.002	<0.002
Zinc	0.297	0.603	0.088	8.64	0.018	<0.01
Cyanide	N/A	<0.01	N/A	<0.01	<0.01	<0.01
Thallium	0.001	<0.001	<0.001	0.003	<0.001	<0.001

Note: N/A - Not Analyzed
Units in mg/l

TABLE 15
NATIONAL SMELTING OF NJ SITE
PEDRICKTOWN, NJ
GROUND WATER QUALITY ANALYSES - RADIOLOGIC PARAMETERS

SAMPLE ID	WELL ID	FILTERED	DATE	GROSS ALPHA	GROSS BETA	K-40	Pb-210	Ra-226	Ra-228	Th-228	Th-230	TH-232	U-234	U-235	U-238
T0006	10	X	8/16/88	<4.0	<10.0										
T0003	11		8/15/88	<10.0	<50.0										
T0011	12	X	8/18/88	<2.0	2.6 +/- 1.6										
T0012	2R2	X	8/17/88	<20.0	<90.0	14.0 +/- 1.0	<10	<0.1	1.0 +/- 0.6	1.3 +/- 0.4	.48 +/- 0.29	<.07	3.4 +/- 0.5	.14 +/- 0.1	3.2 +/- 0.4
T0009	3R		8/16/88	<4.0	9.0 +/- 3.5										
T0007	4R	X	8/18/88	<3.0	13.0 +/- 8.0										
T0008	5R	X	8/16/88	<4.0	<20.0										
T0010	7	X	8/16/88	<6.0	<20.0										
T0032	9R2	X	8/18/88	<0.9	<2.0										
T0035	QS	X	8/19/88	<3.8	6.0 +/- 2.9										
T0004	BR		8/17/88	<8.0	<20.0										
T0005	BR (RB)		8/16/88	<2.8	4.0 +/- 2.4										
T0016	CR2	X	8/17/88	<1.0	<2.0										
T0017	CR2 (RB)		8/17/88	<3.0	<4.0										
T0040	HD	X	8/18/88	<7.0	<20.0										
T0041	HS	X	8/19/88	<3.0	9.3 +/- 6.0										
T0025	ID	X	8/18/88	<1.0	7.1 +/- 1.9										
T0024	JD	X	8/18/88	<8.0	<20.0										
T0022	KD	X	8/18/88	43.0 +/- 26.0	<100.0										
T0021	KD (RB)		8/18/88	<3.0	<4.0										
T0023	KS	X	8/18/88	<10.0	<60.0										
T0013	LD	X	8/17/88	<4.0	7.6 +/- 3.7										
T0028	MD	X	8/18/88	<10.0	<50.0										
T0029	MS	X	8/18/88	<4.0	<9.0										
T0034	ND	X	8/19/88	8.5 +/- 4.9	27.0 +/- 11.0										
T0033	ND (RB)		8/19/88	<5.0	<5.0										
T0037	NS	X	8/19/88	<3.0	<10.0										
T0036	OD		8/19/88	<20.0	<40.0										
T0002	PD (RB)		8/15/88	<3.0	3.7 +/- 2.5										
T0001	PD	X	8/15/88	<20.0	44.0 +/- 29.0										
T0020	PW2		8/17/88	<3.0	<4.0										
T0018	PW3		8/17/88	<1.0	3.1 +/- 1.4										
T0019	P83		8/17/88	1.6 +/- 1.3	3.4 +/- 1.7										
T0014	PW4		8/17/88	<1.0	<2.0										
T0015	PW6		8/17/88	<1.0	6.5 +/- 1.7										
T0031	PW7		8/18/88	<1.0	4.8 +/- 1.6										
T0030	PW9		8/18/88	<5.0	39.0 +/- 7.0										
T0026	RD	X	8/18/88	<3.0	7.7 +/- 2.8	5.3 +/- 0.1	<10	<0.1	<0.8	<2.0	1.1 +/- 0.7	.72 +/- 0.57	<0.2	<.08	<0.1
T0027	RS	X	8/18/88	<1.0	6.5 +/- 1.7										
T0038	SD	X	8/19/88	260. +/- 110.	420. +/- 210.										
T0039	SS	X	8/19/88	<20.0	<40.0										

NOTE: (RB) = Rinse Blank
Units in pCi/l

100104

TABLE 16
NSNJ PEDRICKTOWN
GROUND WATER ANALYSES
ROUND 2

Water Table Wells

2R2	pH, Conductivity, Turbidity, Pb, Cd, SO4, As
3R	pH, Conductivity, Turbidity, Pb, Cd, SO4
4R	pH, Conductivity, Turbidity, Pb, Cd, SO4
5R	pH, Conductivity, Turbidity, Pb, Cd, SO4
7	pH, Conductivity, Turbidity, Pb, Cd, SO4, Cu
11	pH, Conductivity, Turbidity, Pb, Cd, SO4, As, PP
BR	pH, Conductivity, Turbidity, Pb, Cd, SO4
CR2	pH, Conductivity, Turbidity, Pb, Cd, SO4
HS	pH, Conductivity, Turbidity, Pb, Cd, SO4, Sb
HD	pH, Conductivity, Turbidity, Pb, Cd, SO4, Sb
ID	pH, Conductivity, Turbidity, Pb, Cd, SO4
JD	pH, Conductivity, Turbidity, Pb, Cd, SO4, Cu
KS	pH, Conductivity, Turbidity, Pb, Cd, SO4, Cu, alpha, beta, Radio
KD	pH, Conductivity, Turbidity, Pb, Cd, SO4, Cr, Cu, alpha, beta, Radio
LD	pH, Conductivity, Turbidity, Pb, Cd, SO4
MS	pH, Conductivity, Turbidity, Pb, Cd, SO4
MD	pH, Conductivity, Turbidity, Pb, Cd, SO4, As, PP
NS	pH, Conductivity, Turbidity, Pb, Cd, SO4
OP	pH, Conductivity, Turbidity, Pb, Cd, SO4
PD	pH, Conductivity, Turbidity, Pb, Cd, SO4, As
QS	pH, Conductivity, Turbidity, Pb, Cd, SO4
RS	pH, Conductivity, Turbidity, Pb, Cd, SO4
RD	pH; Conductivity, Turbidity, Pb, Cd, SO4
SS	pH, Conductivity, Turbidity, Pb, Cd, SO4, As, alpha, beta, Radio
SD	pH, Conductivity, Turbidity, Pb, Cd, SO4, Cr, Cu, alpha, beta, Radio, PP
Proposed	pH, Conductivity, turbidity, Pb, Cd, SO4, As

First Aquifer

9R2	pH, Conductivity, Turbidity, Pb, Cd, SO4
10	pH, Conductivity, Turbidity, Pb, Cd, SO4
12	pH, Conductivity, Turbidity, Pb, Cd, SO4

Notes:

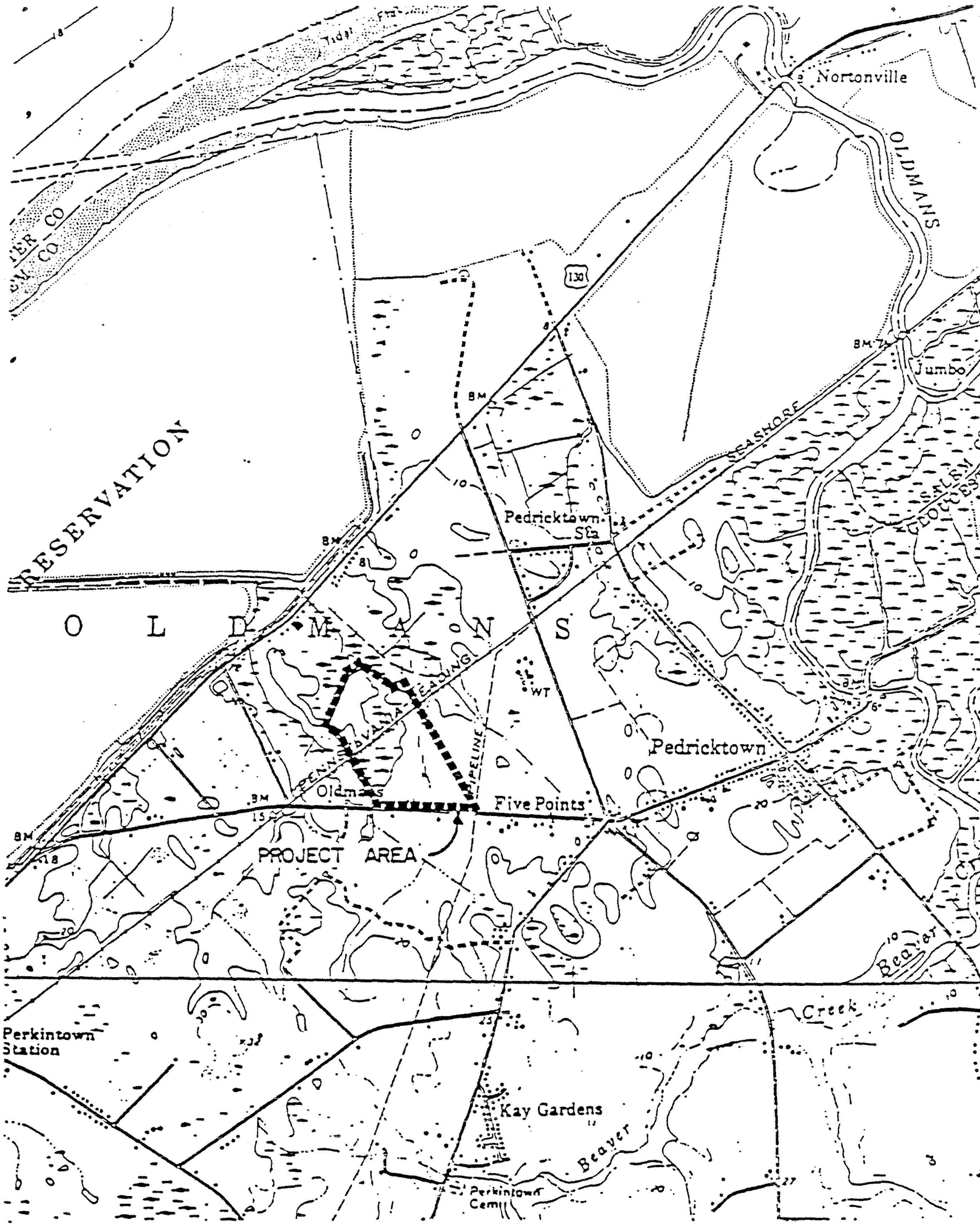
alpha - Gross alpha
beta - Gross beta
Radio - Tritium, Strontium-90, Strontium-89, Iodide-131, Cesium-134
PP - Priority Pollutant Organics

100106

Figures

INDUSTRIES, INC.
PEDRICKTOWN, NEW JERSEY 100107

PROJECT LOCATION MAP



NOTE: Map adapted from U.S.G.S. Marcus Hook, Pa. - Penns Grove, N.J. Quadrangles

O'BRIEN & GERE

PHL PHILADELPHIA, PA

CLASS 7

CEILING-VISIBILITY

WIND GRAPH

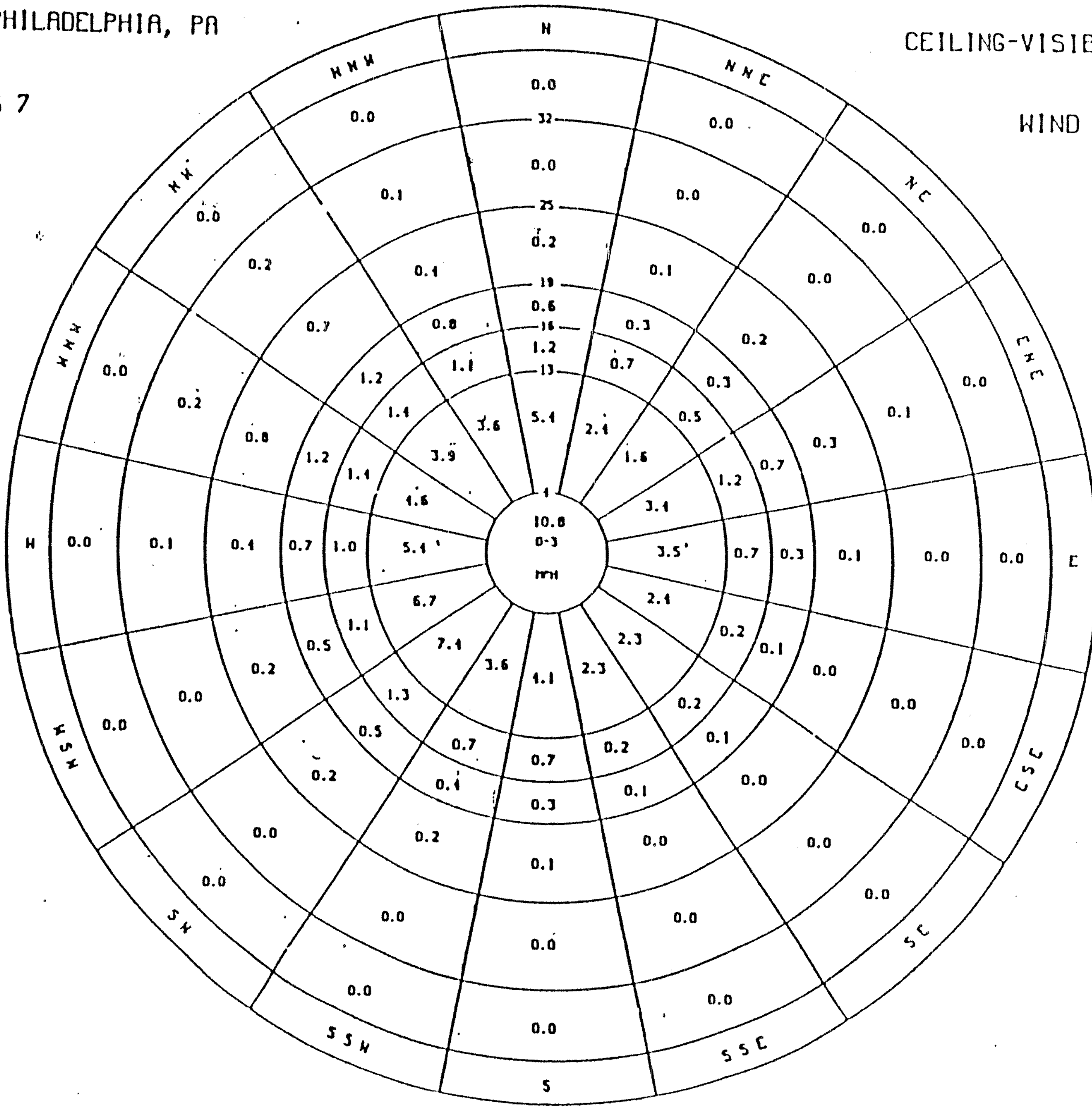


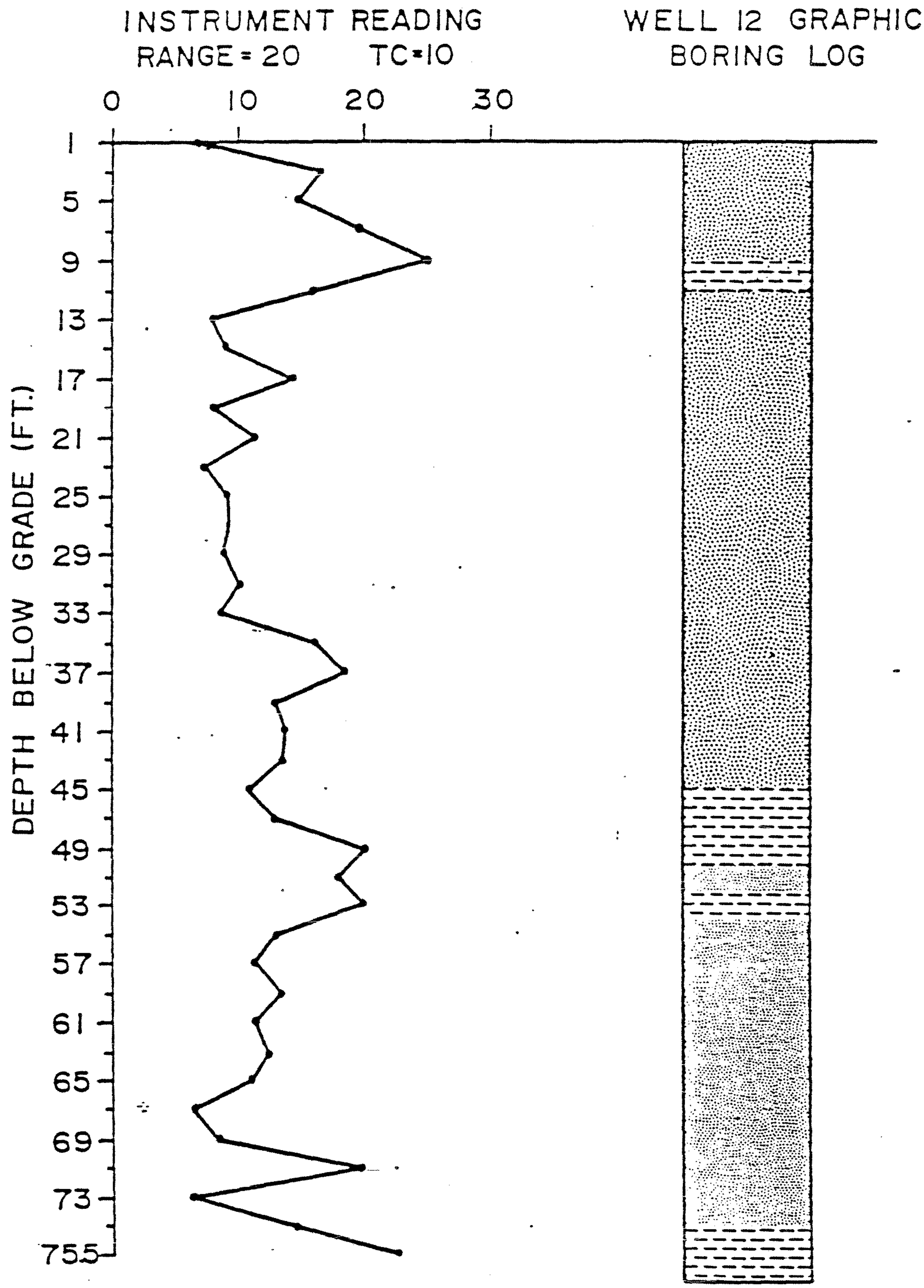
FIGURE 4 - WIND ROSE FOR PHILADELPHIA, PA

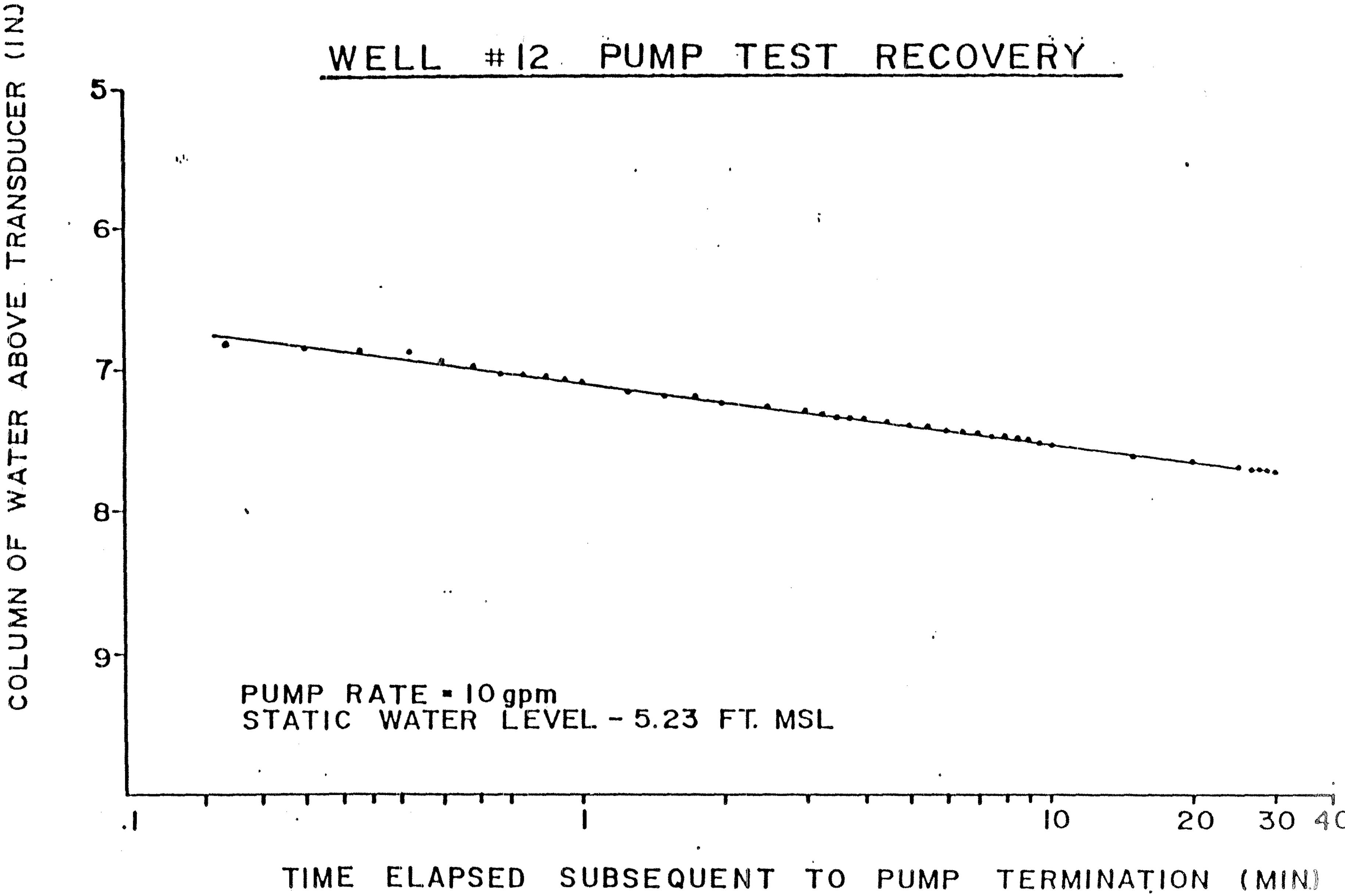
100108

100109

NL INDUSTRIES

WELL 12 GAMMA RAY LOG



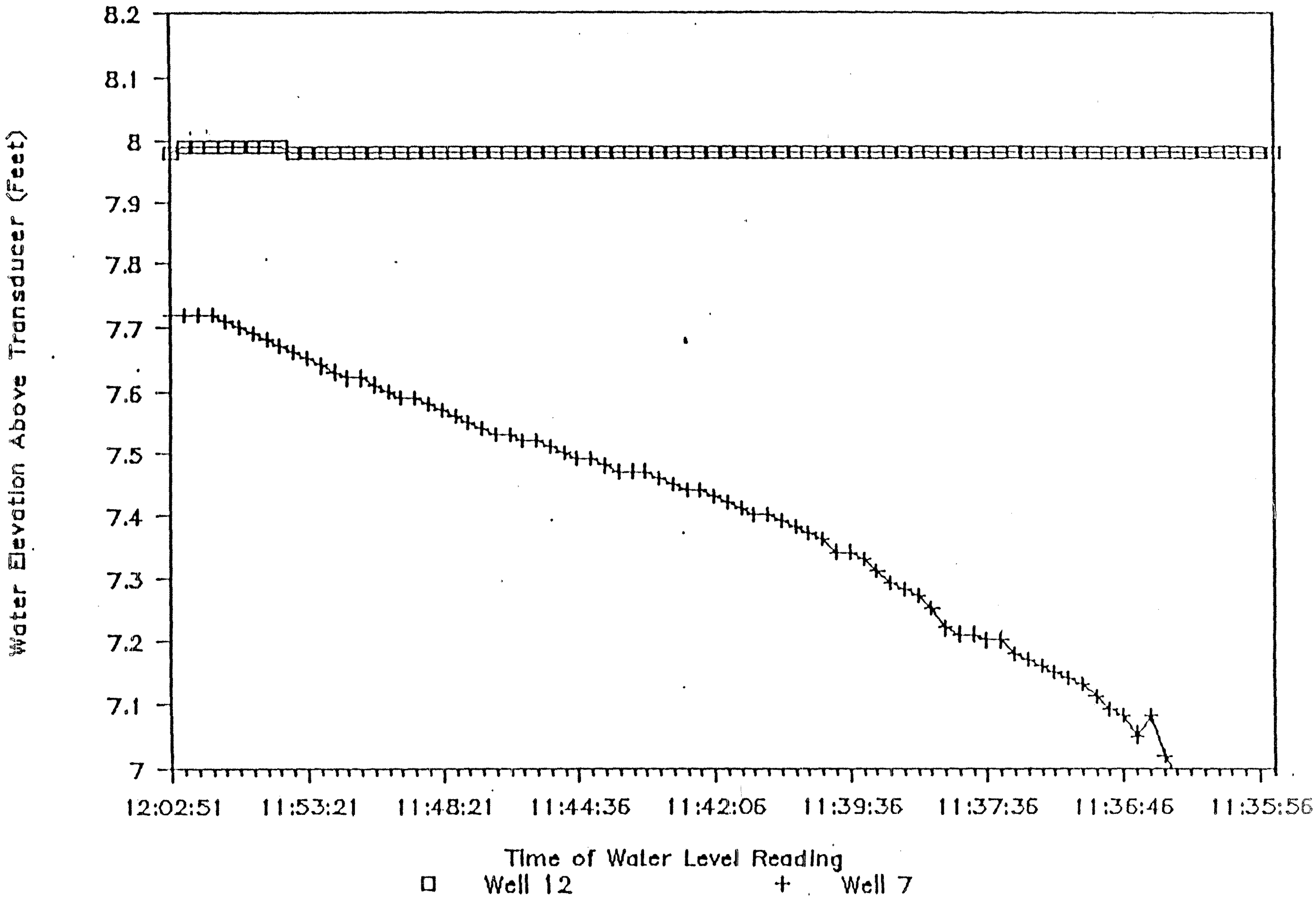


100110

FIGURE 7

Pump Test Water Elevations

Wells 12 and 7



100111

Appendices

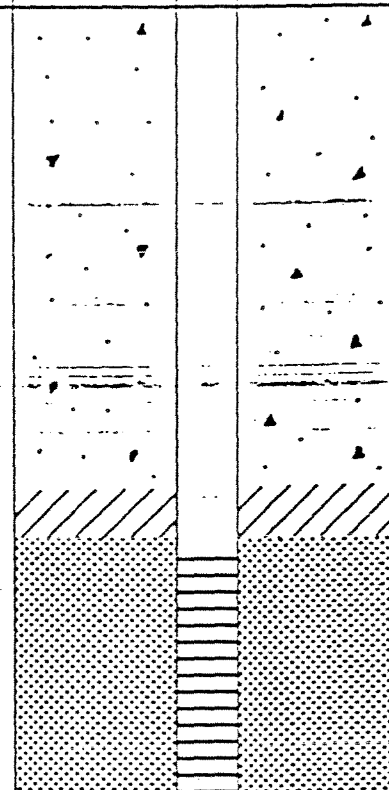
APPENDIX A

BRIEN * GERE GINEERS, INC.	TEST BORING LOG	Report of Boring No. 7 Sheet 1 Of. 1087
ject Location: National Smelting of NJ e NL Industries	SAMPLER Type: 2 inch split spoon Hammer:140 lbs. Fall:30 inches	Ground Water Depth Date Depth Date File No. 2844.014

ing Co. Mathes Drilling
eman: Bill Shen
Geologist: Chris Young

Boring Location: Northeast well (shallow)
Ground Elevation: 11.10 (TOC)
Dates: Started: 6/22/88 Ended:6/23/88

:h	Sample No	Depth	Blows /6"	Penetr/ Recovry	"N" Value	Sample Description	Stratum Change General Descript	Equipment Installed		Equipment Installed	Rmks*
	1	22.5-24.5	NR	24/24		White clean fine to coarse SAND					
5	2	47.5-49.5	NR	24/24		Brown orange CLAY					
5	3	49.5-51.5	NR	24/24		Red/white/brown mottled CLAY stiff and laminated.					



NR- Not recorded
ottom of well set at 47.8 ft
0 ft of .010 slot screen and 40 ft riser (4", sch 40 PVC)

100115

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	Report of Boring No. 12 Sheet 1 of 2
Project Location: National Smelting of NJ Client: NL Industries	SAMPLER Type: 2 inch split spoon Hammer: 140 lbs. Fall: 30 inches	Ground Water Depth Date Depth Date File No. 2844.014

3.1088

Boring Co.: Mathes Drilling
Foreman: George Voloski & Bill Shen
OBG Geologist: Chris Young

Boring Location: Northeast well (deep)
Ground Elevation: 10.87 (TOC)
Dates: Started: 7/11/88 Ended: 7/14/88

Depth	Sample No	Sample Depth	Blows /6"	Penetr/ Recovry	"N" Value	Sample Description	Stratum Change General Descript	Equipment Installed	Equipment Installed	Rmks
0										
4	1	4-6	5/7/11/11	24/24		4-4.6: light brown white medium SAND dry 4.6-5: Brown orange medium SAND with trace silt and caly 5-6: Brown orange and grey SAND fine to coarse grained, little gravel				
9	2	9-11	3/3/6/12	24/24		9-11: Water between 7-8', grey to brown green organic rich clayey SILT to silty clay, gravel and medium to coarse sand intermixed.				
4	3	14-16	67/27/23/28	24/24		14-16: grey/white fine to coarse SAND saturated				
9	4	19-21	27/23/26/28	24/24		19-21: Brown and white medium to coarse SAND and gravel.				
2.5	5	22.5-24.5	33/38/38/45	24/12		22.5-23.8: Fine to coarse SAND and gravel with some clay 23.8-24.5: White fine to medium SAND				
7.5	6	27.5-29.5	4/4/14/16	24/24		27.5-29.5: Same as above				
2.5	7	32.5-34.5	woh/woh/10/10	24/24		32.5-34.5: Same as above				
8	8	38-40	NR	24/24		38-40: grey to grey white very fine to fine SAND with trace of silt				
4	9	44-46	25/25/28/23	24/24		44-46: Grey white fine to coarse SAND occassional silt and clay lenses 2 inch zone of red clay at 45.5'				
.5	10	47.5-49.5	19/19/17/18	24/24		47.5-49.5: Red white brown mottled clay (stiff) and laminated in places				
.5	11	49.5-50.5		NR						
.5	12	50.5-51.5		NR						
	13	52.1-53.7	NR	18/18		52.1-53.7: Grey/white to red/brown white mottled clay w/silty clay zones				
	14	54-56		18/24		54-54.25: same as above 54.25-56: grey white very fine SAND and silt				
	15	59-61	NR	18/24		59-61: Brown orange fine to medium SAND w/some silt and medium to coarse sand				

O'BRIEN & GERE ENGINEERS, INC.	TEST BORING LOG	Report of Boring No. 12 Sheet 2 of 2 3.1089
roject Location: National Smelting of NJ li...: NL Industries	SAMPLER Type: 2 inch split spoon Hammer: 140 lbs. Fall: 30 inches	Ground Water Depth Date Depth Date File No. 2844.014

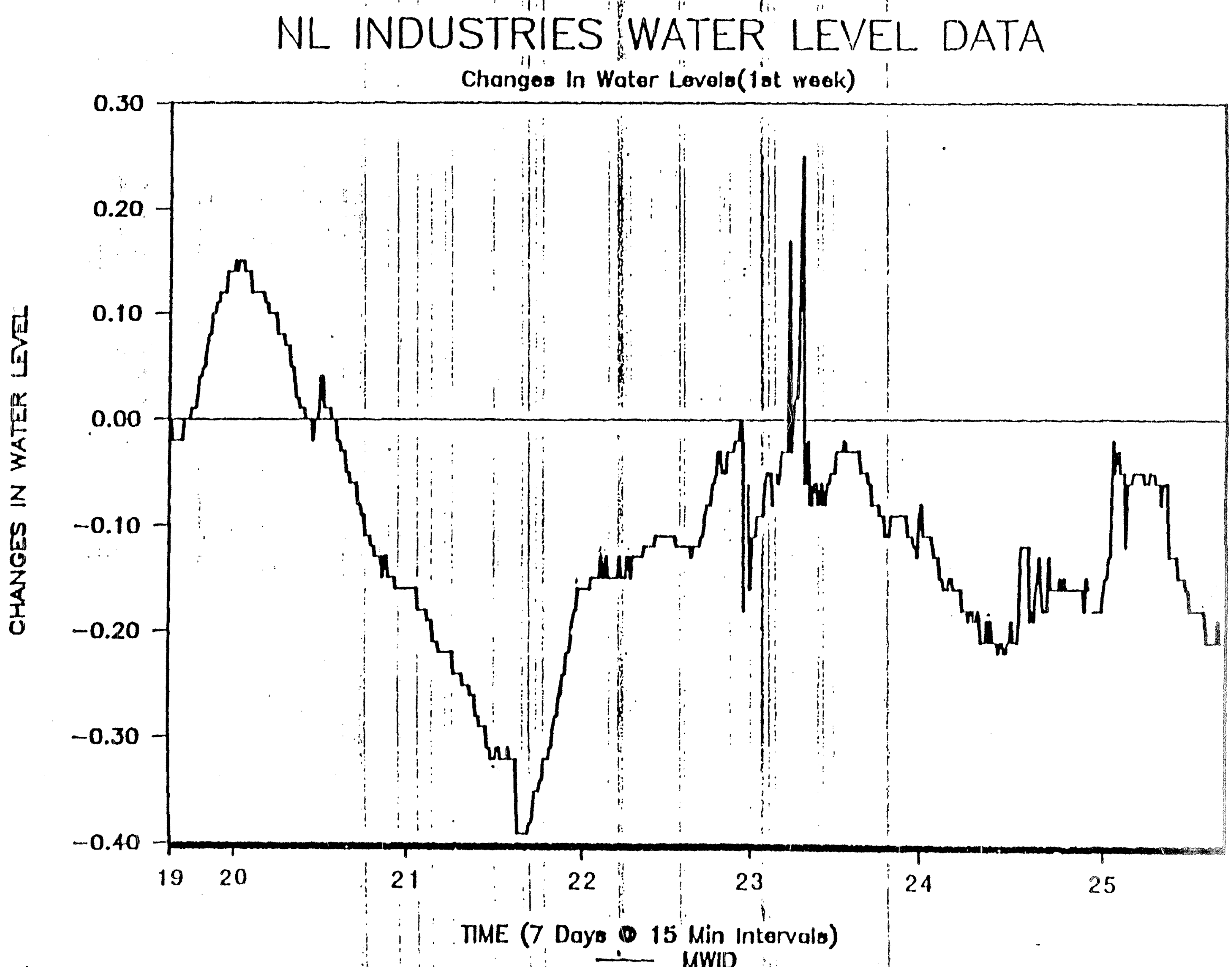
or Co.: Mathes Drilling
oreman: George Voloski & Bill Shen
3G Geologist: Chris Young

Boring Location: Northeast Well (Deep)
Ground Elevation: 10.87 (TOC)
Dates: Started:7/11/88 Ended:7/14/88

epth	Sample No	Sample Depth	Blows /6"	Penetr/ Recovry	"N" Value	Sample Description	Stratum Change General Descript	Equipment Installed		Equipment Installed	Rmks*
64.5	16	64.5-66.5	NR	18/24		64.5-66.5: Fine to medium well graded SAND with intermittent grey clay lenses					
8.5	17	68.5-70.5	NR	24/24		68.5-70.5: fine to coarse white grey brown SAND with little to some silt with brown and white mottled clay lenses					
0.8	18	70.8-72.8	NR	24/24		70.8-72.8: Same as above					
.4	19	76.4-78.4	NR	24/24		76.4-78.4: Grey white very stiff clay with purple mottling					

: NR- not recorded
20 ft of 10 slot sch 40 PVC 4" screen
60 ft of sch 40 PVC 4" riser pipe
Bottom of well set at 76.4 ft

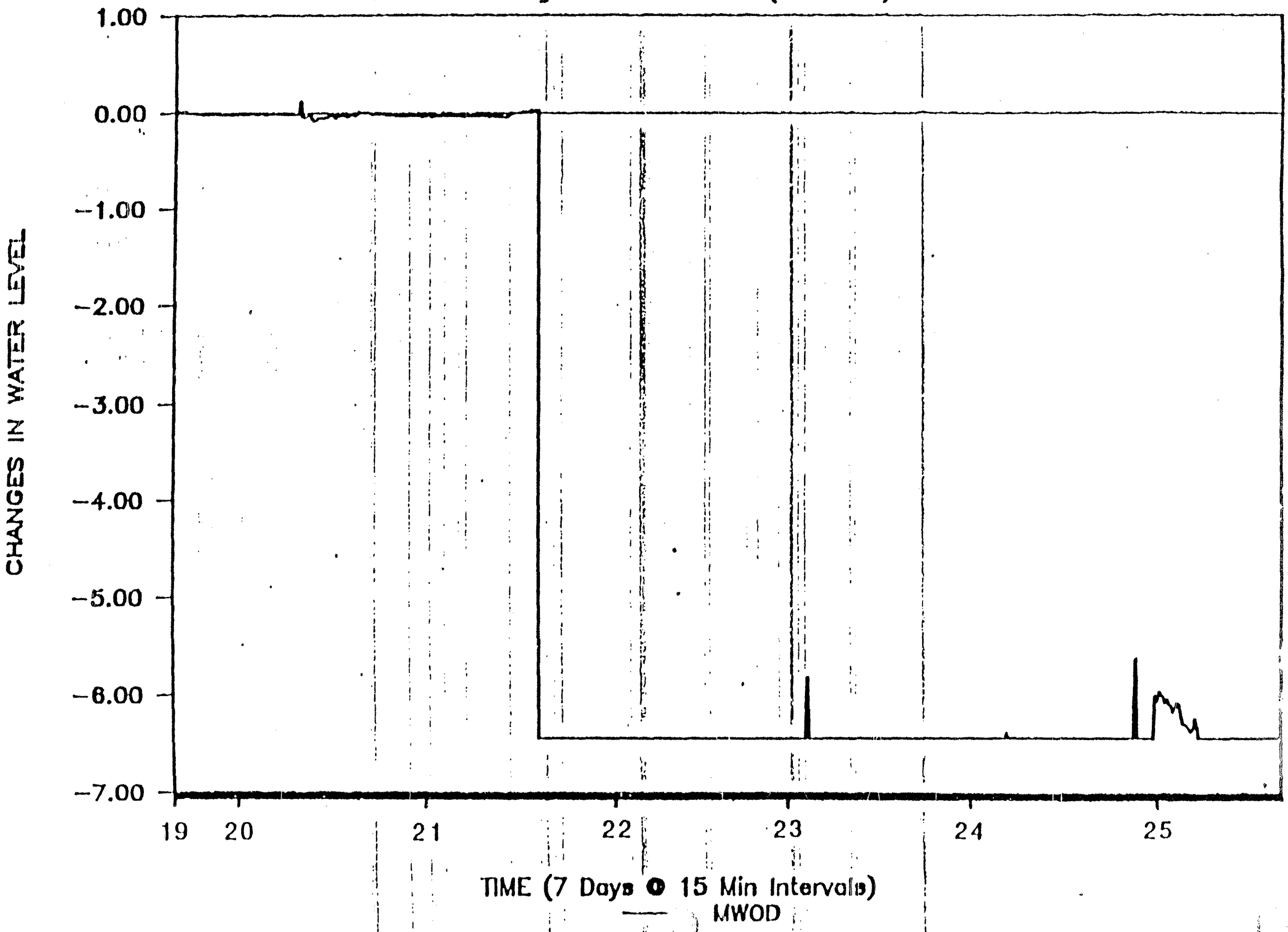
APPENDIX B


NL INDUSTRIES WATER LEVEL DATA
Changes In Water Levels(1st week)
CHANGES IN WATER LEVEL
0.30
0.20
0.10
0.00
-0.10
-0.20
-0.30
-0.40
19
20
21
22
23
24
25
TIME (7 Days @ 15 Min Intervals)
MWID

100118

NL INDUSTRIES WATER LEVEL DATA

Changes In Water Levels(1st week)



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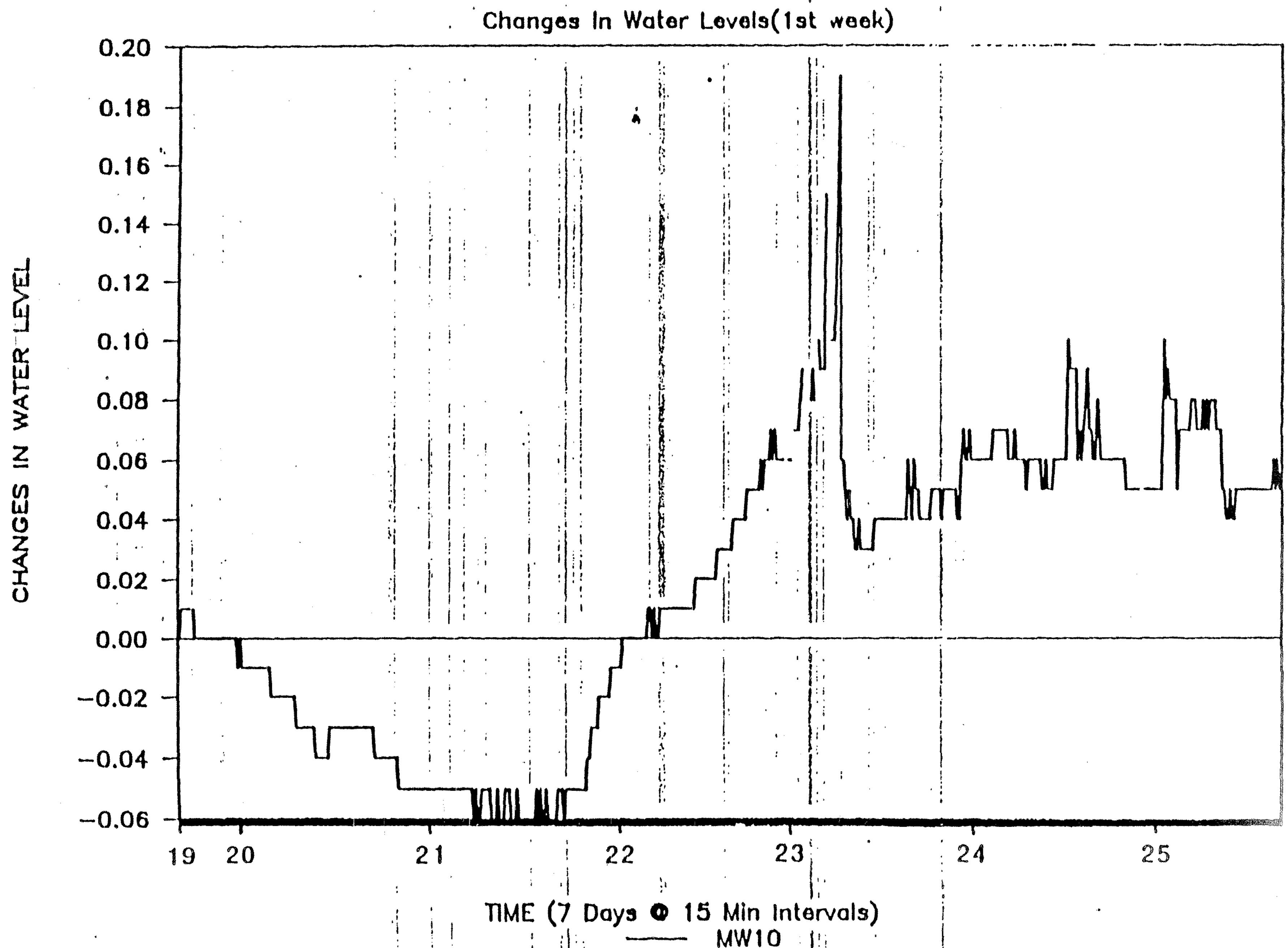
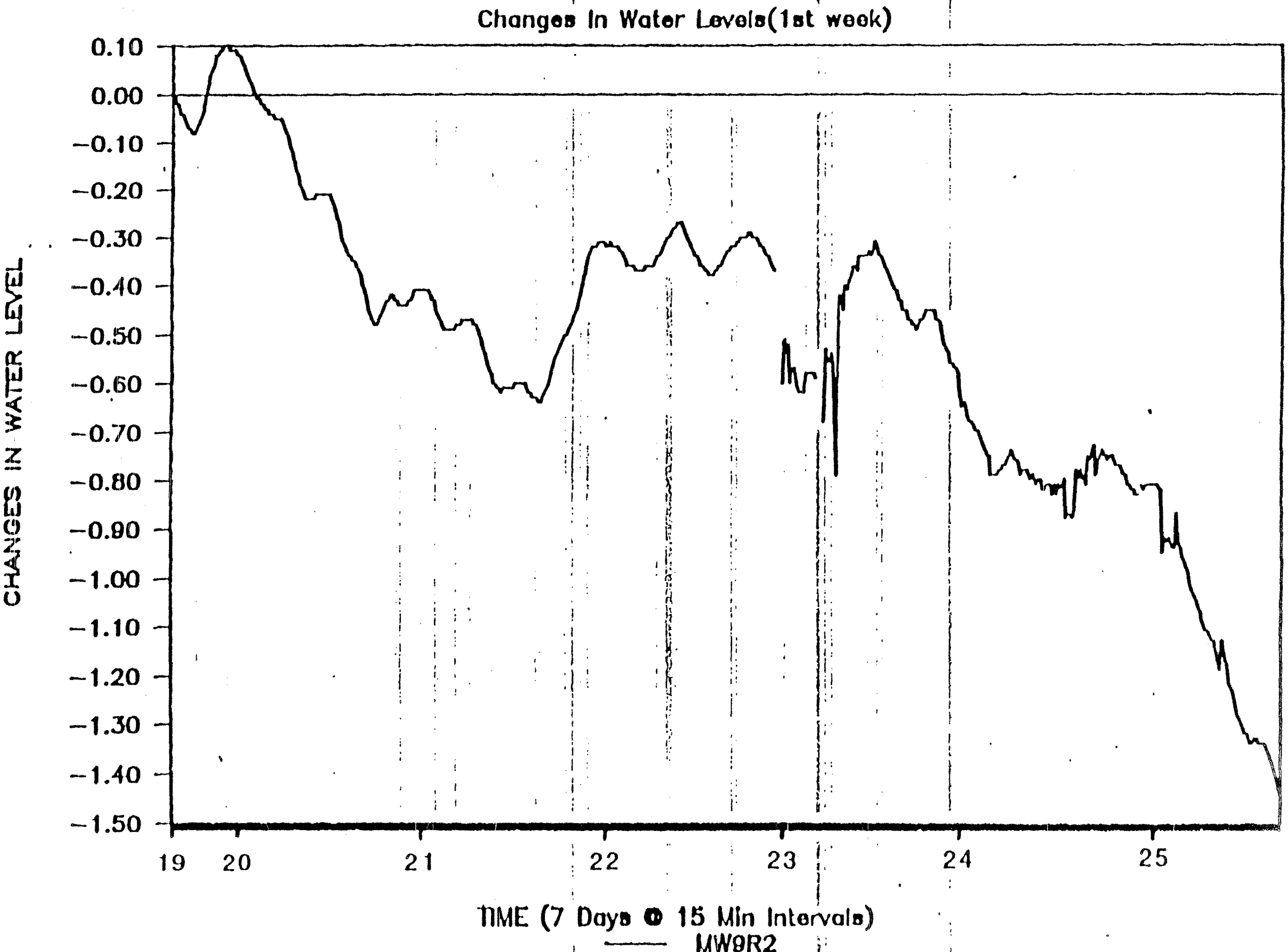
NL INDUSTRIES WATER LEVEL DATA



100120

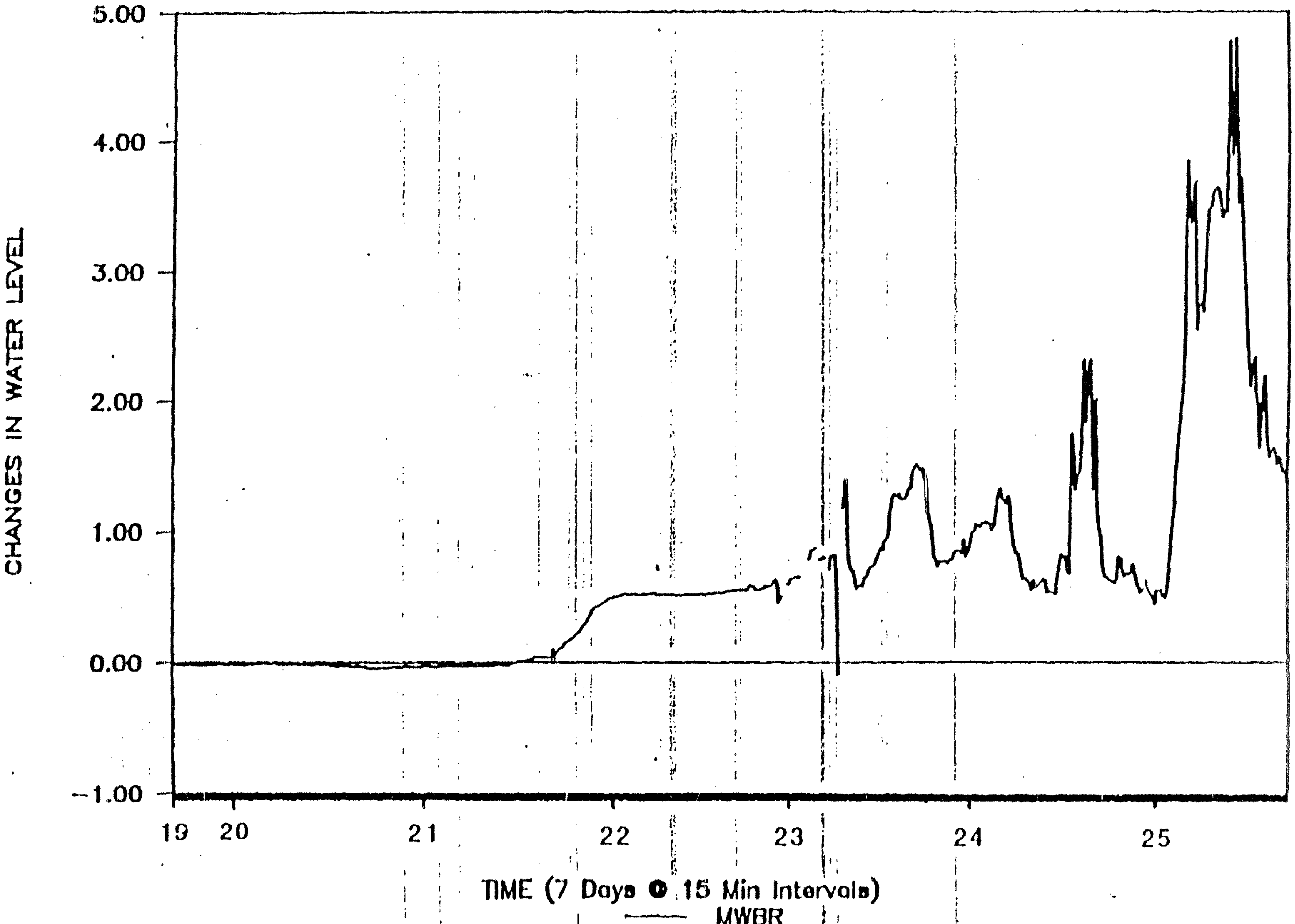
NL INDUSTRIES WATER LEVEL DATA



100121

NL INDUSTRIES WATER LEVEL DATA

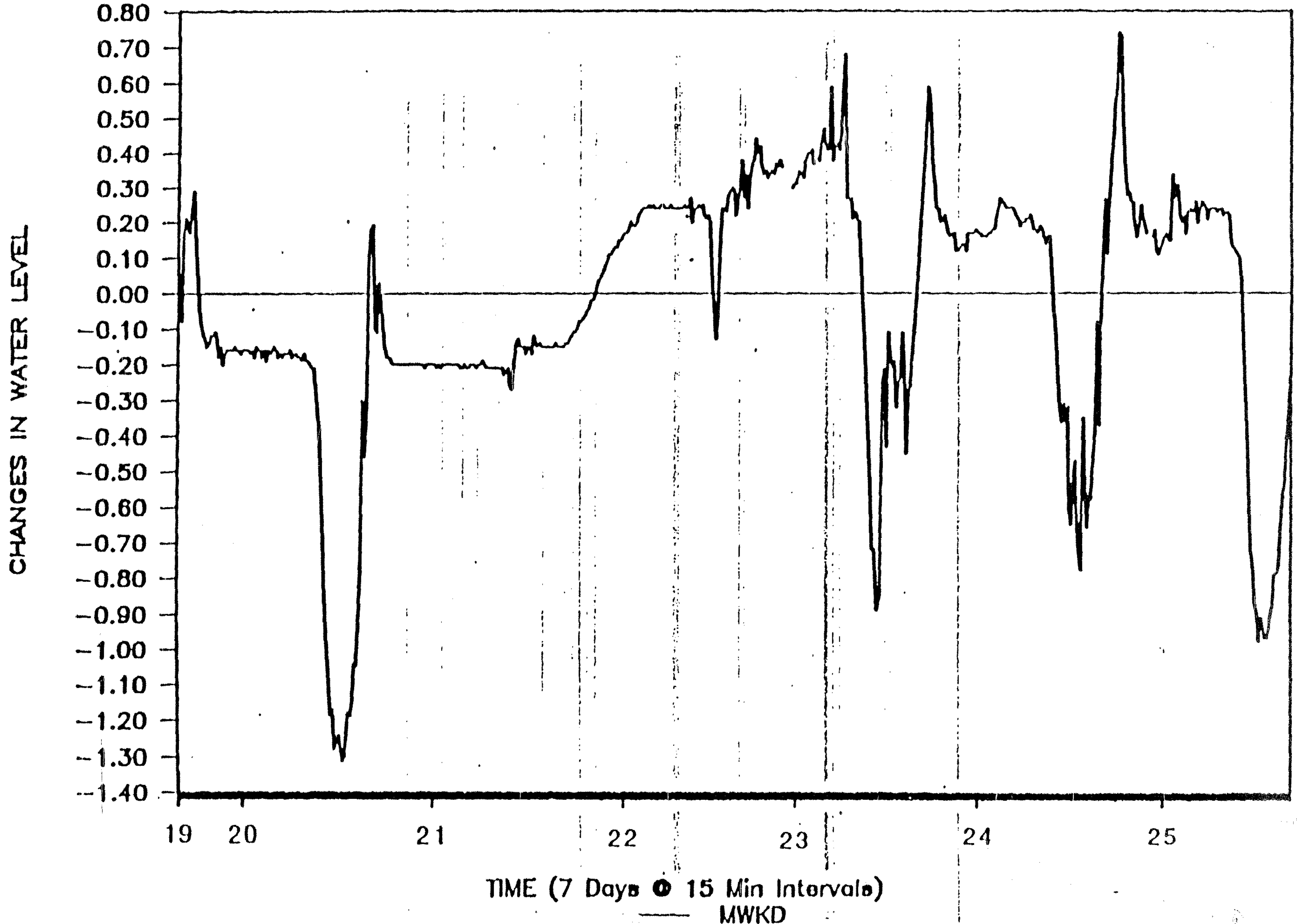
Changes In Water Levels(1st week)



100122

NL INDUSTRIES WATER LEVEL DATA

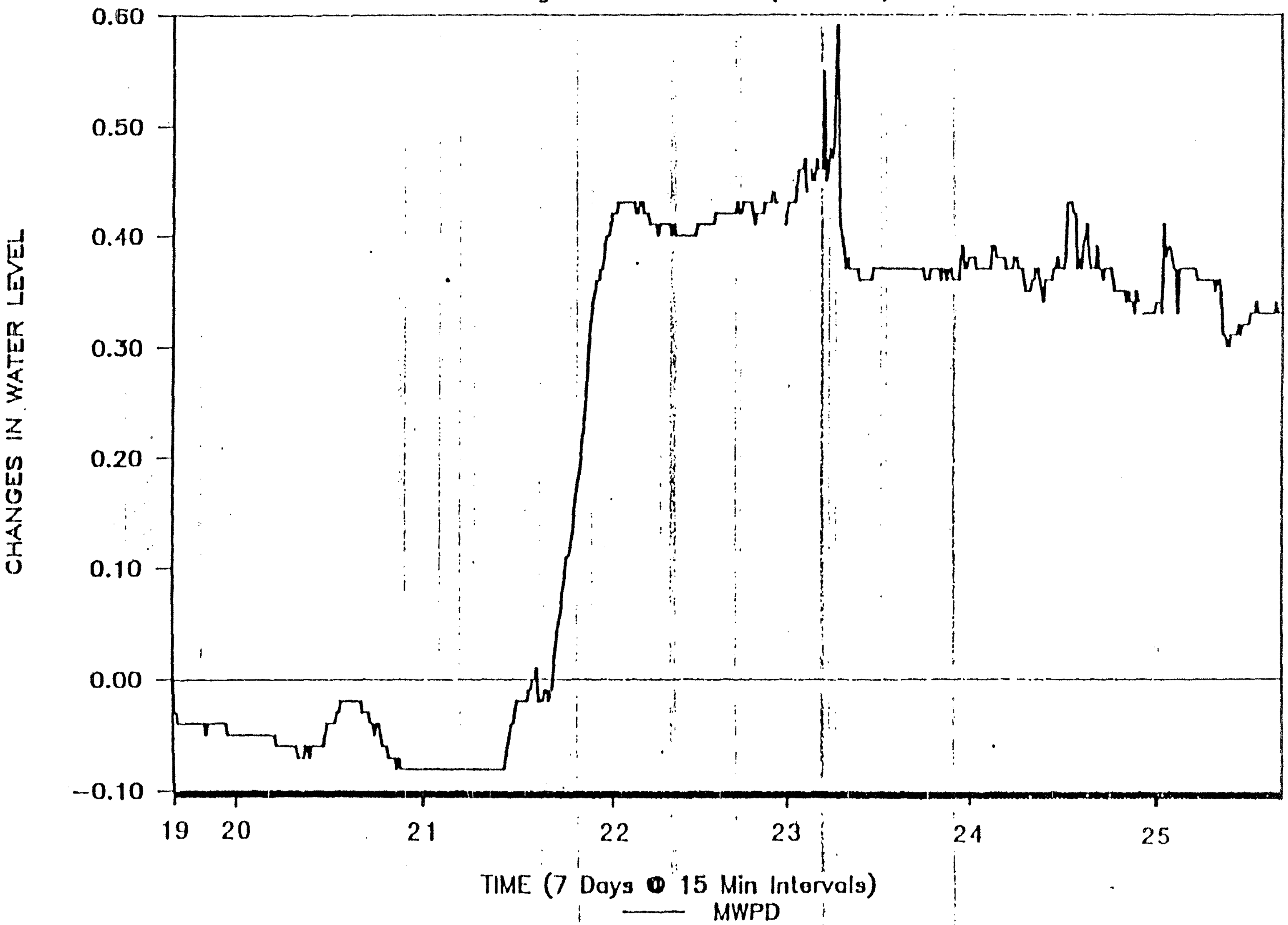
Changes in Water Levels(1st week)



1001123

NL INDUSTRIES WATER LEVEL DATA

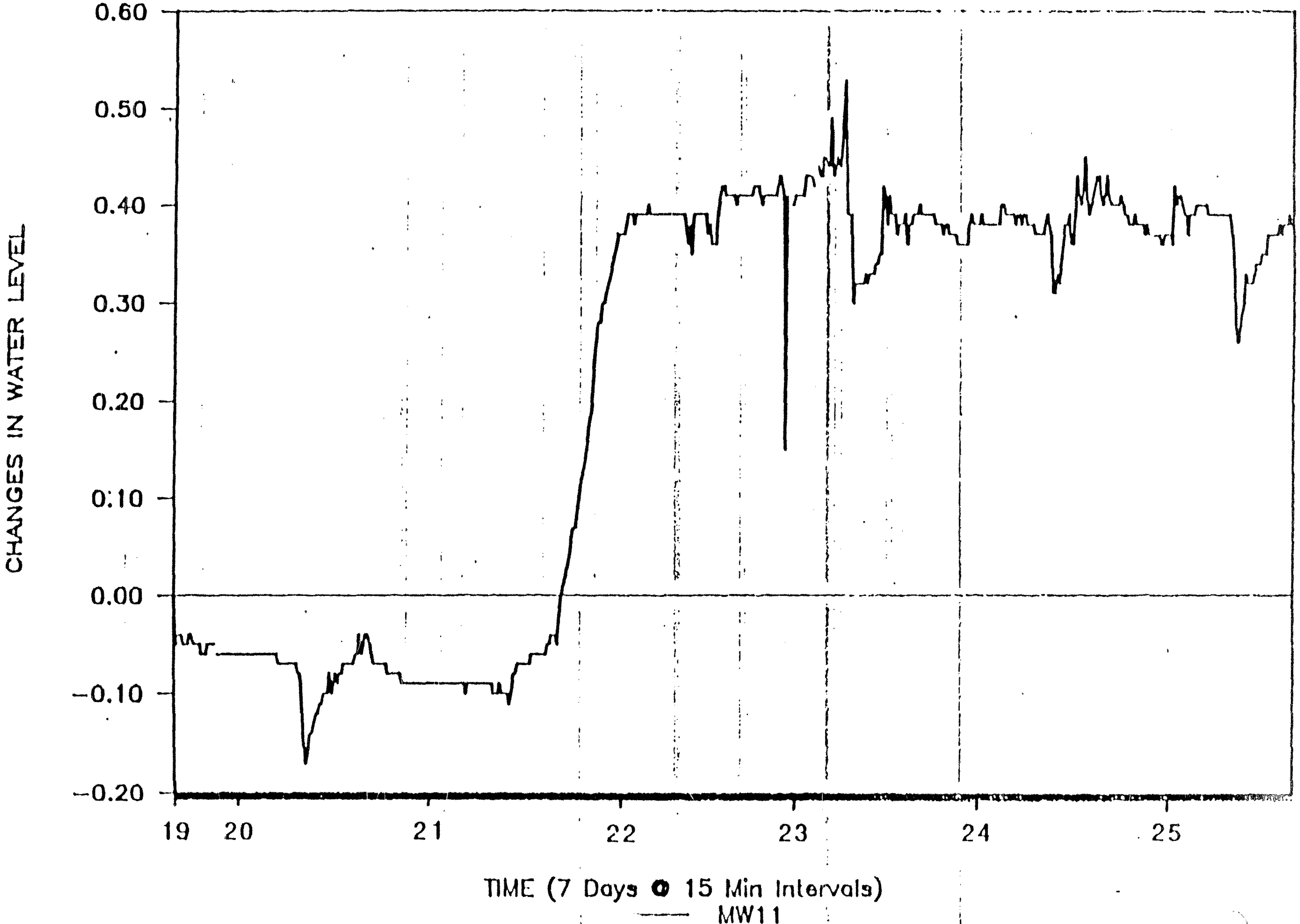
Changes In Water Levels(1st week)



100124

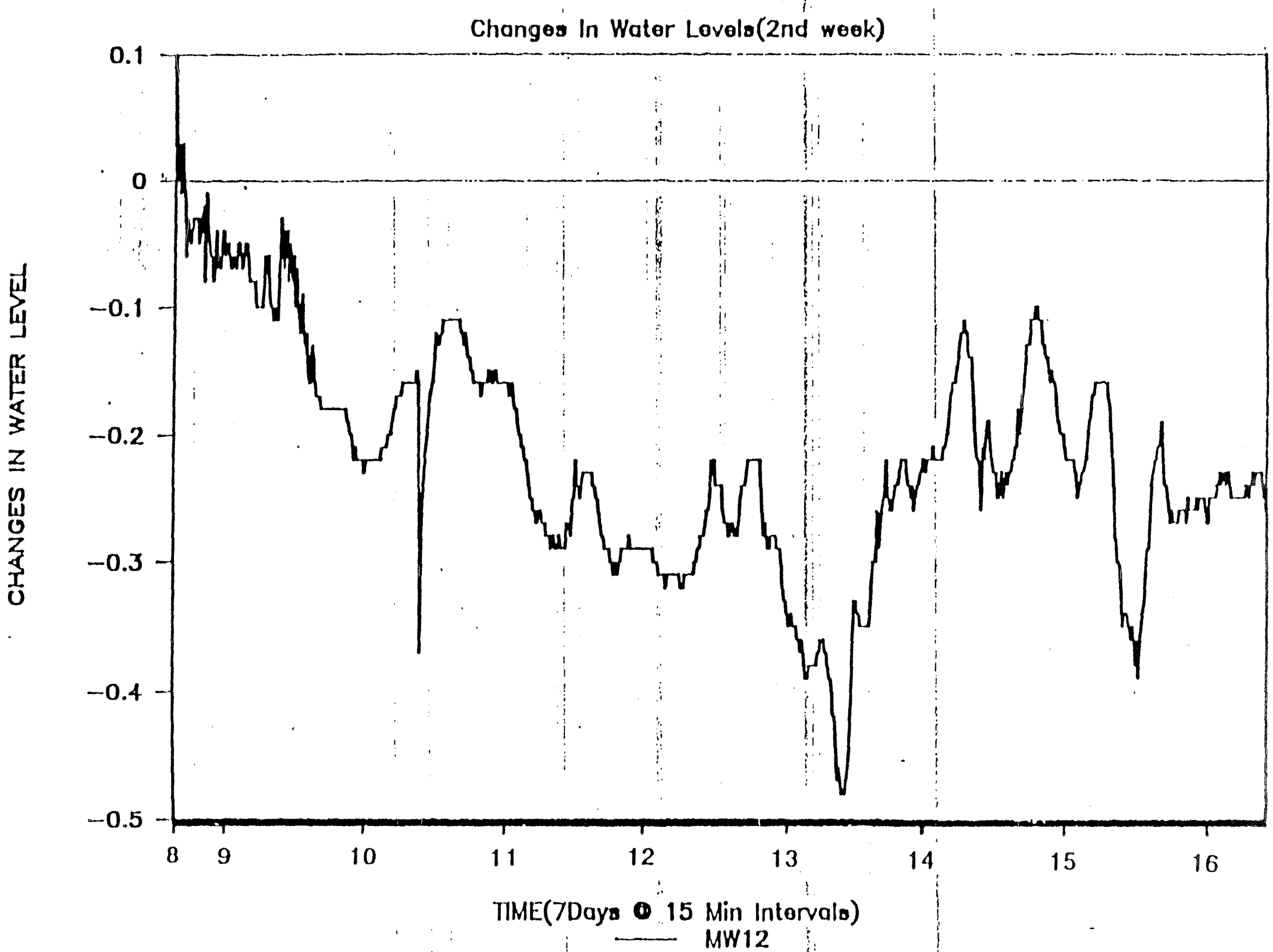
NL INDUSTRIES WATER LEVEL DATA

Changes In Water Levels(1st week)

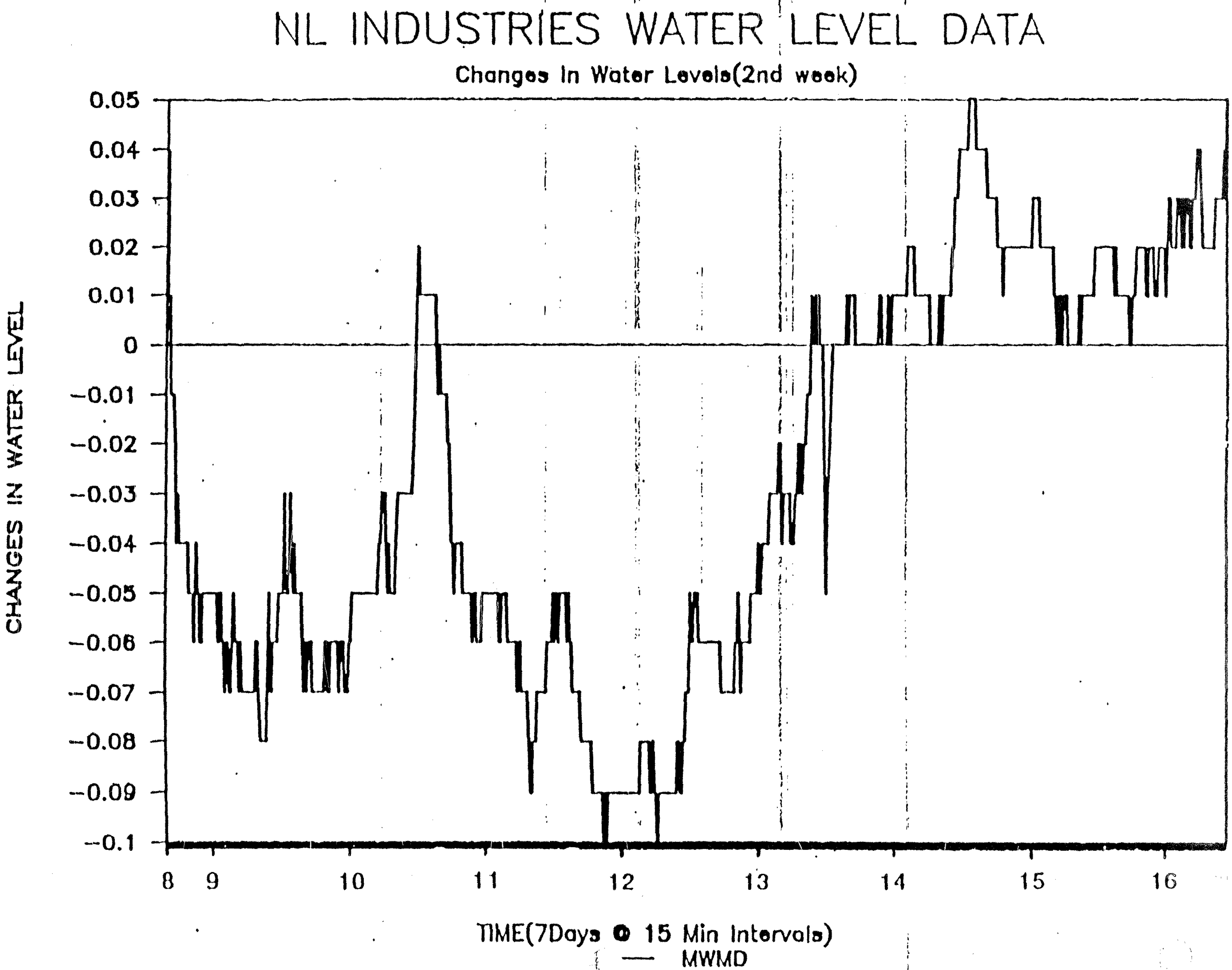


100125

NL INDUSTRIES WATER LEVEL DATA

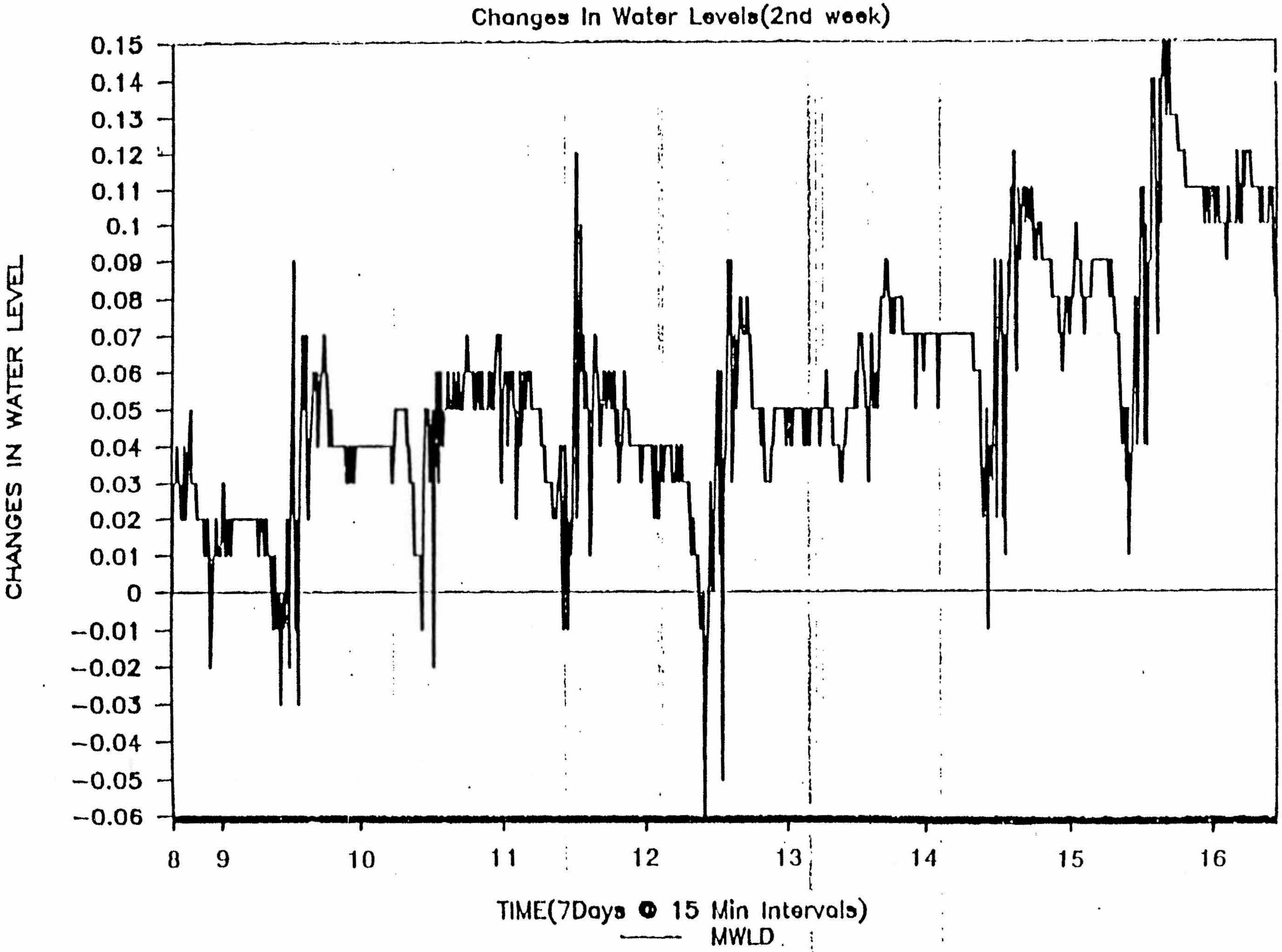


100126



NL INDUSTRIES WATER LEVEL DATA
Changes In Water Levels(2nd week)
CHANGES IN WATER LEVEL
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02
-0.03
-0.04
-0.05
-0.06
-0.07
-0.08
-0.09
-0.1
8
9
10
11
12
13
14
15
16
TIME(7Days @ 15 Min Intervals)
MWMD

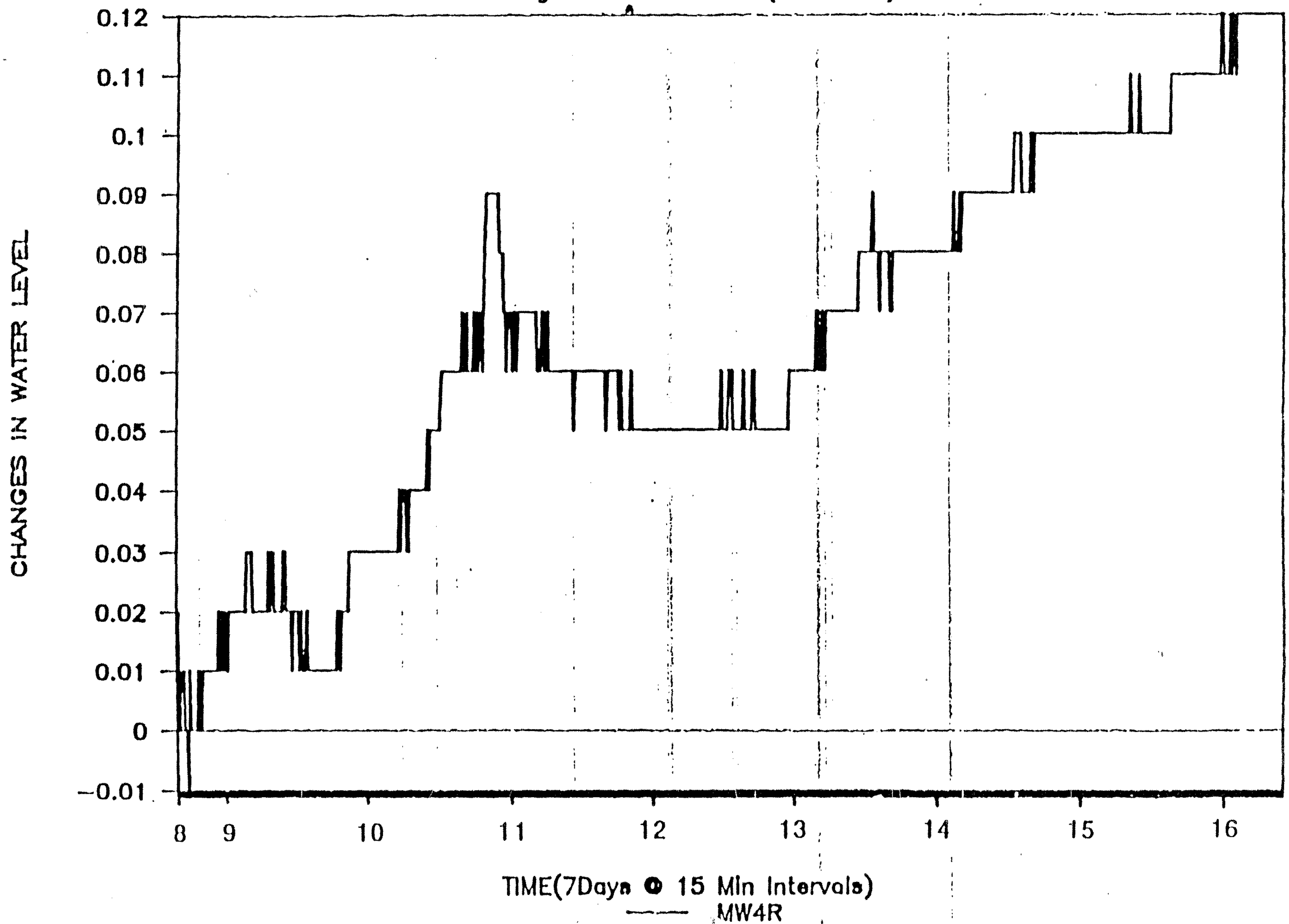
NL INDUSTRIES WATER LEVEL DATA



100128

NL INDUSTRIES WATER LEVEL DATA

Changes In Water Levels(2nd week)



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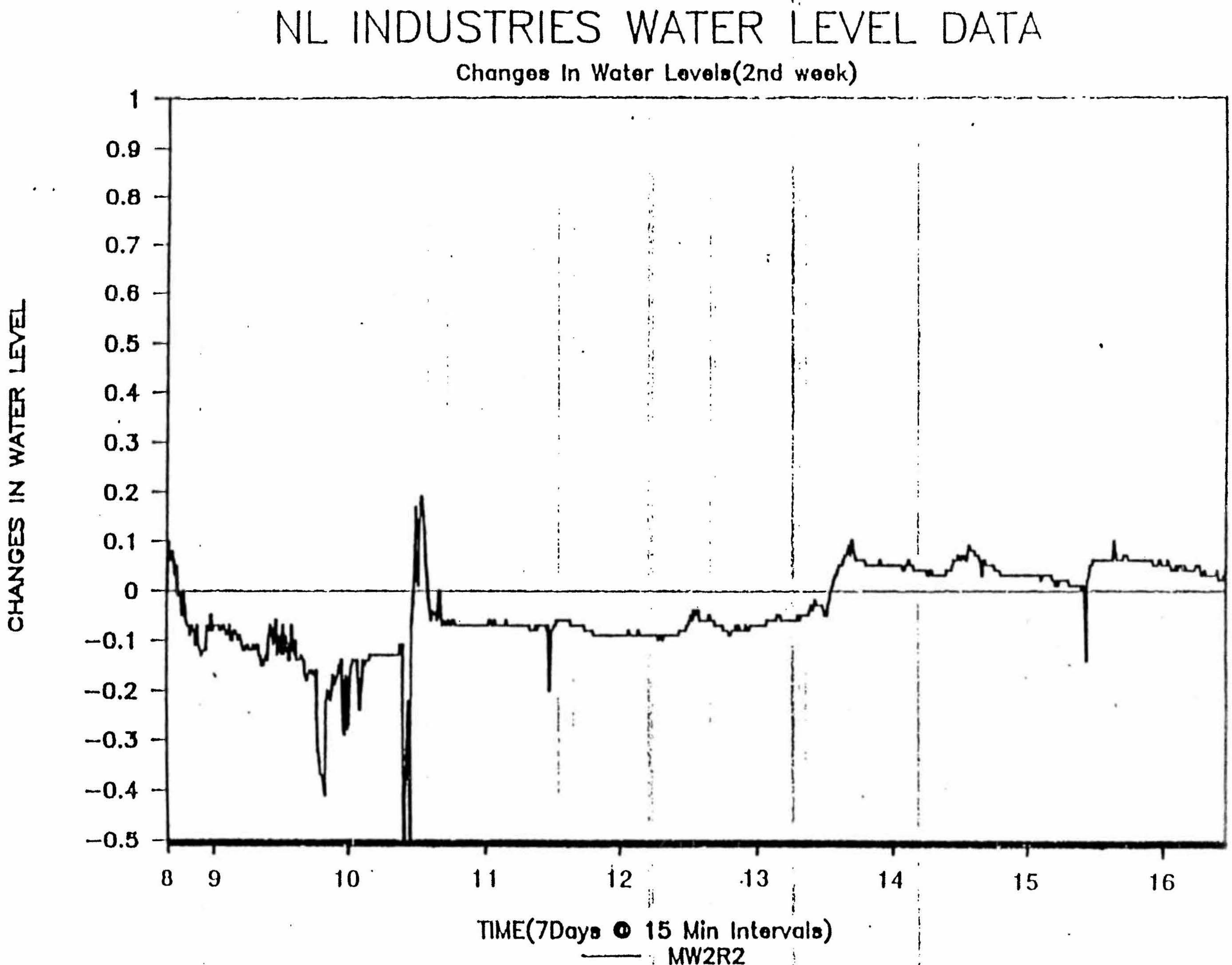
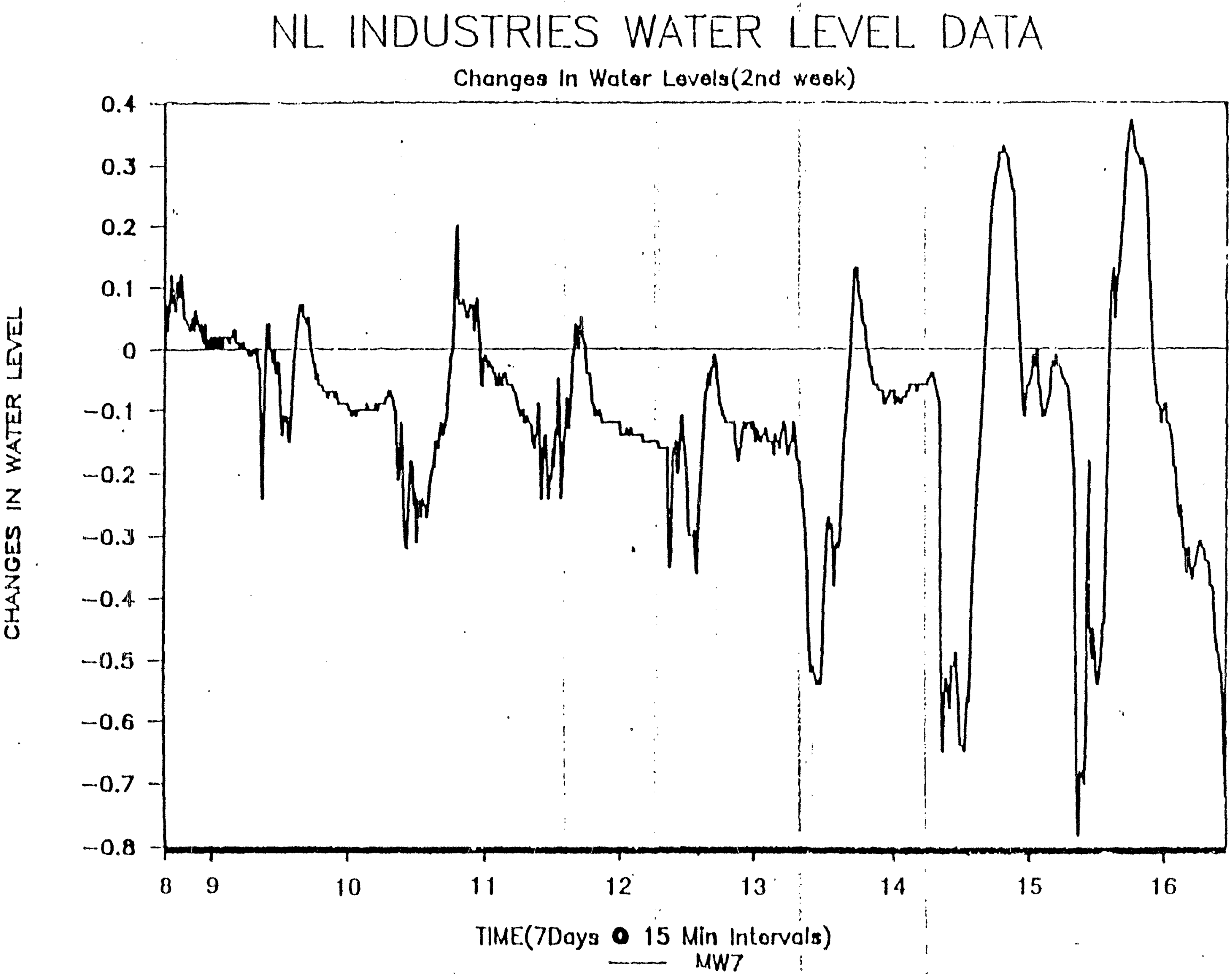

NL INDUSTRIES WATER LEVEL DATA
Changes In Water Levels(2nd week)
CHANGES IN WATER LEVEL
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
8
9
10
11
12
13
14
15
16
TIME(7Days @ 15 Min Intervals)
MW2R2

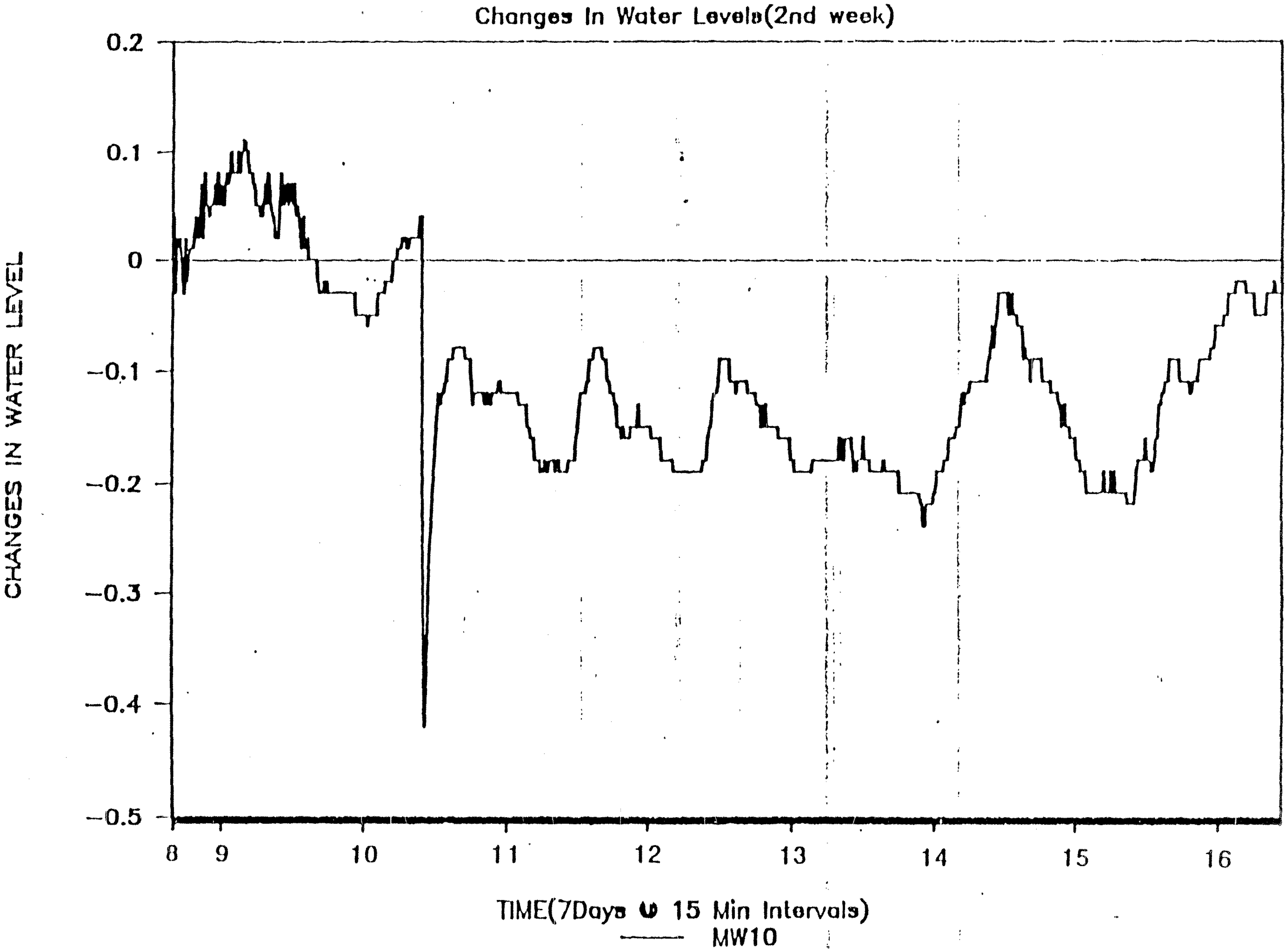
100130



NL INDUSTRIES WATER LEVEL DATA
Changes In Water Levels(2nd week)
CHANGES IN WATER LEVEL
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
8
9
10
11
12
13
14
15
16
TIME(7Days @ 15 Min Intervals)
MW7

100131

NL INDUSTRIES WATER LEVEL DATA



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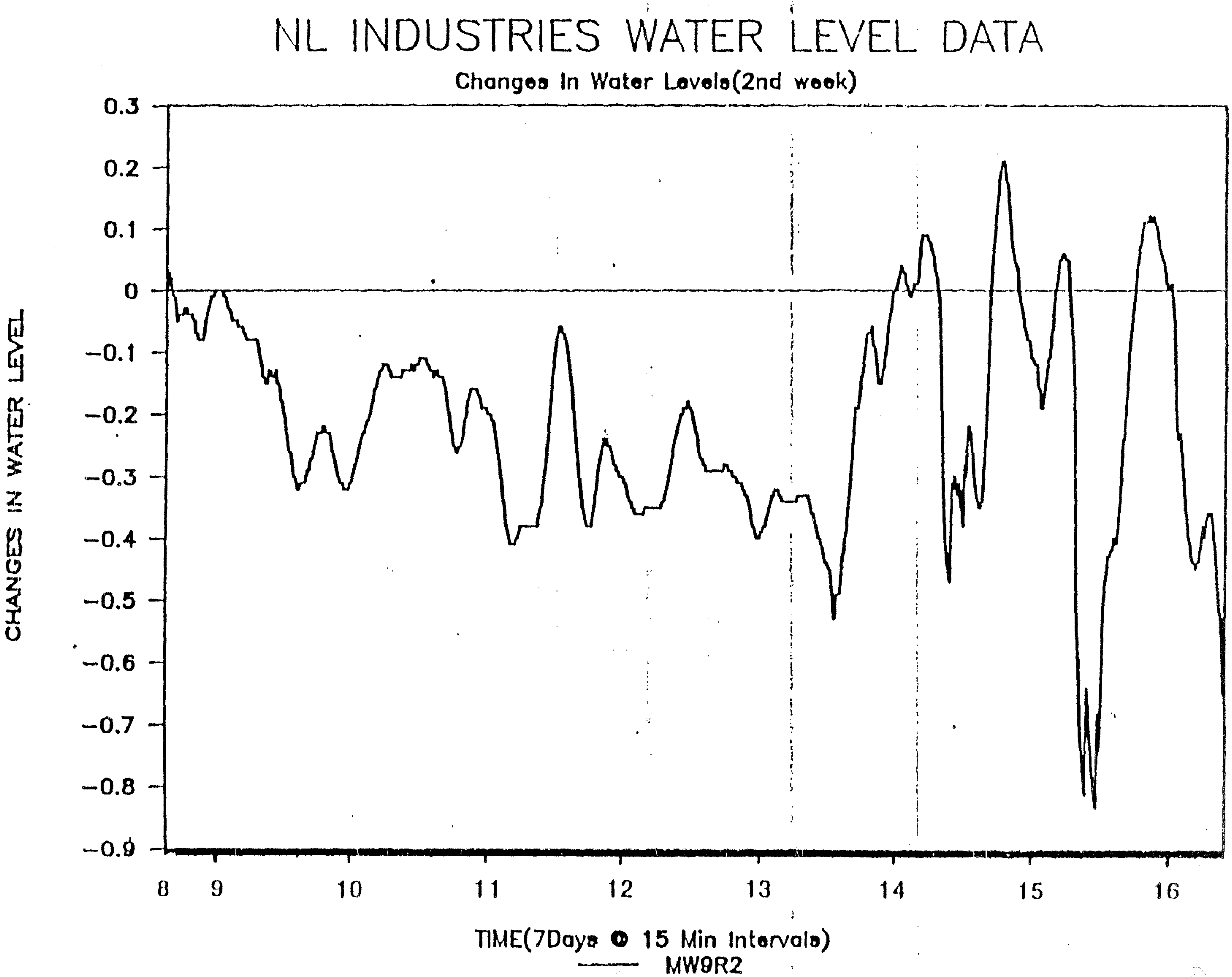

NL INDUSTRIES WATER LEVEL DATA
Changes In Water Levels(2nd week)
CHANGES IN WATER LEVEL
0.3
0.2
0.1
0
−0.1
−0.2
−0.3
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
8
9
10
11
12
13
14
15
16
TIME(7Days @ 15 Min Intervals)
MW9R2

100133

Exhibits

EXHIBIT A

NSNJ Pedricktown
Landfill Leachate

Parameter	Phase "A" Primary Sump n	Max	Phase "B" Primary Sump n	Max	Phase "A" Secondary Sump n	Max	Phase "B" Secondary Sump n	Max
Antimony Sb	7	6.6	7	0.48	1	0.49		
Arsenic As	3	38.3	1	227	1	0.006	7	0.49
Arsenic Filt.	2	2.7	1	72.1	1	0.007	1	91.7
Barium Ba	1	1					1	60.6
Cadmium Cd	4	0.31	1	0.06	1	0.01	1	0.06
Cadmium Filt.	2	0.3	1	0.05	1	0.01	1	0.05
Chloride Cl	7	19300	7	630	1	164	6	525
Iron Fe	8	12300	7	184	1	1.1	7	9.5
Iron Filt.	1	8100						
Lead Pb	9	12.3	8	24.6	2	0.49	8	2.95
Lead Filt.	1	0.04	1	0.38	1	0.5	1	0.33
Manganese Mn	4	15.8	1	7.5	1	23	1	0.67
Manganese Filt.	2	13	1	0.07	1	22	1	0.67
Selenium Se	4	0.27	1	0.58	1	0.009	1	0.75
Selenium Filt.	2	0.041	1	0.44	1	0.011	1	0.61
Sulfate SO4	4	39100	1	20000	1	2730	1	33300
Tin Sn	6	13	7	1.4	1	0.5	7	2
T.O.C.	1	150	1	2170	1	27	1	2520
B.O.D.	6	9200	7	210	1	3	7	6
C.O.D.	6	17100	7	560	1	49	7	97
Hardness	6	584	7	1625	1	790	6	1100
pH	10	12.7(1.7)	8	11 (4.6)	2	6.3(5.2)	8	9.4(5 3)
Phenols	6	16.1	7	0.78	1	0.002	7	0.128
T.D.S.	10	169000	8	66400	2	4300	8	64700
Turbidity	10	920	8	250	2	31	8	170

Notes:
- If two pH values are recorded, the first value is the maximum pH and the second, in parentheses, is the minimum value.
- Samples collected by NL Industries, Inc.; analysis conducted by Century Environmental Labs, Inc., Thorofare, NJ.

EXHIBIT B

NATIONAL SMELTING OF NJ SITE
PEDRICKTOWN, NJ
UNFILTERED - RADIOLOGIC PARAMETERS

SAMPLE ID	WELL ID	FILTERED	DATE	GROSS ALPHA	GROSS BETA	K-40	Pb-210	Ra-226	Ra-228	Th-228	Th-230	TH-232	U-234	U-235	U-238
T0006	10		8/16/88	13.0 +/- 4.0	20.0 +/- 8.0										
T0003	11		8/15/88	<10.0	<50.0										
T0012	2R2		8/17/88	<30.0	<80.0	24.0 +/- 1.0	<10	<0.1	2.3 +/- 0.6	1.8 +/- 0.3	<.05	.09 +/- .08	3.8 +/- 0.5	.08 +/- .07	4.2 +/- 0.1
T0007	4R		8/18/88	<6.0	17.0 +/- 0.7										
T0007	3R		8/16/88	<4.0	9.0 +/- 3.5										
T0008	5R		8/16/88	7.4 +/- 3.7	<10.0										
T0004	8R		8/17/88	<8.0	<20.0										
T0024	JD		8/18/88	<9.0	<20.0										
T0028	MD		8/18/88	<10.0	<30.0										
T0026	RD		8/18/88	<2.0	12.0+/- 4.0	5.5 +/- 0.1	<10	<0.1	<0.9	4.8 +/- 0.4	<.04	.22 +/- .09	0.36 +/- 0.32	<0.2	<0.3
T0027	8S		8/18/88	<1.0	7.1 +/- 2.0										

NOTE: (RB) = Rinse Blank
Units in pCi/l

NOTE: This data provided for NJDEP use, not to be incorporated in Remedial Investigation Report.

100138

NL 2.4044

March 5, 1991

Mr. Eugene G. Dominach
USEPA REGION II
Incident Response and
Prevention Branch
Woodbridge Avenue, Building 209
Edison, NJ 08837

Dear Mr. Dominach:

RE: REVISED WORK PLAN FOR THE NL INDUSTRIES SITE PEDRICKTOWN, NEW JERSEY - D.O. #7445-02-061

O.H. Materials Corp. (OHM) is pleased to submit a revised work plan to the United States Environmental Protection Agency (USEPA) for the clean-up activities at the above-referenced site.

The enclosed work plan was developed from our 3-hour site tour and from data received and discussed during our visit on February 28, 1991.

If you have any questions concerning this plan, please feel free to contact me at 800-468-1907.

Sincerely,

James L. Whitehead IV
Northeast Regional Response Manager

LDG:ddc

Enclosure

pc: Robert H. Panning, ERCS Program Manager
Project 7925E

100140

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 8
To Eugene Dominach	From Jim Whitehead
Co.	Co.
Dept.	Phone #
Fax # 201-906-6182	Fax #

WORK PLAN FOR EMERGENCY RESPONSE SERVICES FOR THE NL INDUSTRIES SITE PEDRICKTOWN ROAD PEDRICKTOWN, SALEM COUNTY, NEW JERSEY

Submitted to:

United States
Environmental Protection Agency
Region II
Edison, New Jersey
Mr. Eugene E. Dominach - On-Scene Coordinator

Prepared by:

O.H. Materials Corp.

James L. Whitehead IV
Northeast Region - Response Manager

Project 7925E

MAR 7 1991

TABLE OF CONTENTS

1.0 INTRODUCTION

OHM is pleased to submit this work plan to USEPA Region II in response to Delivery Order 7445-02-061. The tasks associated with the scope of work will be performed simultaneously and concurrently to maximize on-site resource utilization and provide the USEPA with the most cost-effective, straight-forward approach.

1.1 SCOPE OF WORK

The scope of work to be addressed is as follows:

- Receive and setup office trailer
- Mobilization
- Site preparation
- Purchase materials for reinforcing any suspect containment areas
- Remove and strip plastic coating from electrical lines and stage for relocation in Edison as per your direction
- Empty recycled materials in piles and stage under covered areas as per your direction
- Crush empty containers and stage on site under covered areas as per your direction

2.0 TECHNICAL APPROACH

The following sections outline the methodology which OHM will employ to perform the scope of work.

2.1 SITE SECURITY

OHM will modify present on site security to limit this portion of the project to times when EPA or OHM personnel are not on site.

2.2 OFFICE TRAILER SET-UP

OHM will solicit for, and obtain 3 quotes from rental agencies for an appropriate office trailer. Office trailer will be set up prior to mobilization of OHM and OSC to site. OHM will arrange for utility company power. The existing telephone lines will be utilized just as they were in the previous stage of work. NR

2.3 MOBILIZATION

Personnel and equipment required to perform the scope of work will be obtained from the nearest available resources.

Mobilization will commence promptly after receiving authorization from the OSC. The following information outlines the proposed personnel and major equipment which will be mobilized during the project duration.

Personnel	Equipment
1-Response Manager	1-Decontamination trailer
1-Field clerk	1-Office trailer
1-Foreman	1-580 case
2-Equipment operators	
5-Cleanup technicians	1-Hi-lift or cherry picker
~~2-Chemist~~	1-936
~~1-Sample technician~~	1-Computer for RCMS
~~1-Electrician~~	
~~1-Safety Officer~~	Level C, D protective clothing
	Sampling equipment
	Air monitoring equipment
	~~1-GC meter, beta and gamma~~

OHM recommends a work schedule of 6 to 8 hours per day, 5 days per week

2.4 SITE PREPARATION

Upon completion of mobilization, site preparation activities will commence and will consist of the following:

- o Delineation of work zones
- o Set up personnel and equipment decontamination stations
- o Prepare office and decontamination trailers
- o Conduct site safety and work plan orientation with crew
- o Commence daily/weekly planning and documentation activities
- o Purchase required materials (i.e. plywood etc.)

2.5 COPPER RECLAMATION

Plastic coated copper wire is evident over the entire area of the plant.

OHM will use a scissored cherry picker to retrieve the copper wire and strip the plastic coating for reclamation or reuse. These materials will be stored in a secure area for eventual transport from the confines of the plant.

2.6 STAGE DRUMS AND THEIR CONTENTS

During our site walk, full and empty drums were observed outdoors or around the building parameter. Approximately 400 full drums are located outdoors. These drums will be emptied and their contents will be staged under the covered shed at the west end of the facility. Special care will be taken to ensure there is no cross contamination of standing water by using swamp mats in areas of standing water. The drums will be crushed with the loader and staged in a similiar area as the prior held contents.

2.7 EMPTY CONTAINERS

An empty contain will be any container with less than 1 inch of product remaining. Approximately 1,000 empty containers are scattered around the facility. Technicians will verify that the containers are empty, crush them and stage the containers as per your direction.

2.8 TEARDOWN/DEMOBILIZATION

Upon completion of the scope of work to the satisfaction of the OSC, OHM will commence the decontamination of equipment and tools utilized during the performance of the scope of work. All work areas will be policed and secured. Personnel and equipment will then be demobilized to their respective origins.

3.0 PROJECT SCHEDULE

OHM anticipates on performing the scope of work in 15 days. A breakdown of the proposed schedule per work task is as follows:

Task	Anticipated Duration in Days
Site security	Project duration as needed only
Office trailer set up	1 day
Mobilization/site preparation	1 day
Remove and strip copper wire	1 day
Stage materials and drums	5-7 days
Teardown/demobilization	1 day

OHM will maintain flexibility for either increasing crew size or work hours if site conditions warrant, to meet any time restraints requested by the OSC.

LG:ddc

5

100147

OHM Corporation

November 2, 1989

Mr. Eugene G. Dominach
USEPA REGION II
Incident Response and
Prevention Branch
Woodbridge Avenue, Building 209
Edison, NJ 08837

Dear Mr. Dominach:

RE: WORK PLAN FOR THE NL INDUSTRIES SITE PEDRICKTOWN, NEW JERSEY - D.O. #7445-02-061

O.H. Materials Corp. (OHM) is pleased to submit a work plan to the United States Environmental Protection Agency (USEPA) for the clean-up activities at the above-referenced site.

The enclosed work plan was developed from our 4-hour site tour and from data received and discussed during our visit on October 11, 1989.

If you have any questions concerning this plan, please feel free to contact me at 800-242-4644.

Sincerely,

Lonnie D. Guinn
Northeast Regional Response Manager

LDG:ddc

Enclosure

pc: Mr. Robert H. Panning, ERCS Program Manager
Project 7925E

DRAFT

WORK PLAN FOR EMERGENCY RESPONSE SERVICES FOR
THE NL INDUSTRIES SITE
PEDRICKTOWN ROAD
PEDRICKTOWN, SALEM COUNTY, NEW JERSEY

Submitted to:

United States
Environmental Protection Agency
Region II
Edison, New Jersey
Mr. Eugene E. Dominach - On-Scene Coordinator

Prepared by:

O.H. Materials Corp.

____
Mr. Lonnie D. Guinn
Northeast Region - Response Manager

November 2, 1989
Project 7925E

TABLE OF CONTENTS

1.0 INTRODUCTION

OHM is pleased to submit this work plan to USEPA Region II in response to Delivery Order 7445-02-061. The tasks associated with the scope of work will be performed simultaneously and concurrently to maximize on-site resource utilization and provide the USEPA with the most cost-effective, straight-forward approach.

1.1 SCOPE OF WORK

The scope of work to be addressed is as follows:

- Receive and setup office trailer, establish permanent power and three telephone lines
- Contact chainlink fence contractors for quotes to fabricate metal closures
- Mobilization
- Site security
- Site preparation
- Purchase materials for encapsulation of slag piles
- Install closure as directed
- Mix and apply encapsulant
- Prepare and ship materials for recycling
- Sample and prepare materials for disposal
- Provide precautionary measures to control localized flooding to the on-site stored materials
- Site teardown/demobilization

2.0 TECHNICAL APPROACH

The following sections outline the methodology which OHM will employ to perform the scope of work.

2.1 SITE SECURITY

OHM will solicit for, and obtain three quotes from qualified security guard services. The selected security service will perform, at a minimum, the following:

- o Provide an unarmed security guard for 24-hours per day, 7 days per week
- o Control site access
- o Notify OHM/USEPA of any unusual conditions (24-hour numbers will be posted)
- o Maintain observation log book
- o Security service will start after site mobilization

2.2 OFFICE TRAILER SET-UP

OHM will solicit for, and obtain 3 quotes from rental agencies for an appropriate office trailer. Office trailer will be set up prior to mobilization of OHM and OSC to site. OHM will arrange for utility company power and arrange for 3 telephone lines (one for USEPA's On-Scene Coordinator (OSC), and one for OHM's Response Manager (RM), and one for the RCMS computer and fax machine.

2.3 METAL CLOSURES

Due to deterioration and vandalism, several doorways are opened and need replacement. Through discussions with the OSC and RM, openings will be fabricated using chain-link fence fabric and metal frames attached to building. OHM will solicit quotes from 3 chain link fence companies to fabricate these closures. OHM will cover several other openings in the walls and roof with plywood or metal sheeting.

OHM will install the fabricated metal closures to secure openings in building and provide ventilation and attached plywood over other openings as directed. Metal closures will be welded to metal framing of buildings or bolted through cement walls as feasible.

2.4 MOBILIZATION

Personnel and equipment required to perform the scope of work will be obtained from the nearest available resources.

Mobilization will commence promptly after receiving authorization from the OSC. The following information outlines the proposed personnel and major equipment which will be mobilized during the project duration.

Personnel	Equipment
1-Response Manager	1-Decontamination trailer
1-Field clerk	1-Office trailer
1-Foreman	1-Bobcat loader with grappler attachment
1-Equipment operator	1-Hi-lift or cherry picker
5-Cleanup technicians	1-Backhoe
2-Samples	1-Computer for RCMS
	1-185-CFM air compressor
	2-3" double diaphram pumps
	1-500-gallon poly tank
	Level C, D protective clothing
	Sampling equipment
	Air monitoring equipment
	1-GC meter, beta and gamma

OHM recommends a work schedule of 6 to 10 hours per day.

2.5 SITE PREPARATION

Upon completion of mobilization, site preparation activities will commence and will consist of the following:

- o Delineation of work zones
- o Set up personnel and equipment decontamination stations
- o Prepare office and decontamination trailers
- o Conduct site safety and work plan orientation with crew
- o Commence daily/weekly planning and documentation activities
- o Purchase required materials (i.e. plywood etc.)

2.6 ENCAPSULANT

Four slag piles containing iron oxides, lead and other material require encapsulation to control airborne dust from leaving the site.

OHM will purchase 34 drums of semi-pave from CAM Construction, LTD (a manufacturer of semi-pave). OHM will clear run-off areas around slag piles and repile using a backhoe and/or a bobcat as situation indicates.

Encapsulant will be mixed in a 500-gallon poly tank at a ratio of 1:1 (i.e., 1 55-gallon drum of semi-pave to 1 55-gallon drum of water). Encapsulant will be poured into poly tank then the water. A pipe attached to an air compressor will be injected into the solution to agitate and achieve a homogeneous mixture. After mixing, the encapsulant will be applied utilizing a suction house, with mud screen, centrifical pump, fire hose, and fire nozzle adjusted to 0.5 gallon per square yard. A cherry picker or manlift will be utilized for applying encapsulant over piles.

Note: A catch barrier will be built using sand bags to limit future run offs, if needed.

2.7 RECYCLE/DISPOSAL OF STORED MATERIALS

OHM will prepare and ship materials listed in appendix C. Every effort will be used to recycle as much as possible. (As per the OSC direction, TAT will investigate these materials for recycle and or disposal). After investigations OHM will contact manufactures of products or disposal facilities. Cylinders will be handled through a subcontractor to identify, and sample as needed. OHM will sample items for disposal as needed. All items shipped off site will be in compliance with local, state and federal regulations.

Gamma source flow meter will be dismantled and packaged by OHM. All items requiring overpacking will be handled as follows:

- o Small items i.e., 40 lb. bags, 5 gallon containers will be overpacked by hand into 30-gallon drums

- o Large items i.e., 55-gallon drums will be overpacked into 85-gallon salvage drums using bobcat and drum grappler or forklift with drum sling to facilitate placement of drum into overpack

OHM will ensure all items are properly identified and labeled prior to shipment, (items that are identified by manufactures labels, will have information transferred to overpacks. Items that are unidentified will be sampled and analyzed. Asbestos containing material listed in appendix C will be wet down and packaged in asbestos disposal bags and overpacked in drums and labeled. A water sprayer will be used to wet material thoroughly before packaging to prevent fibers from becoming airborne.

2.8 LOCALIZED FLOOD CONTROLS

OHM will provide, as directed, precautionary measures to control localized flooding to the on-site stored materials. Some of the measures that will be employed are to build barrier walls 6-8 inches of cement, drainage channels, repair roof and wall leaks, etc.

2.9 SAMPLING FOR DISPOSAL

In the event that materials listed in appendix c, required disposal, OHM will use the following procedures for sampling these items.

2.10 STAGE AND SAMPLE DRUMS

During our site walk, full drums were observed in the building and outdoors or ground the building parameter. Approximately 150 full drums are inside the building, and approximately 400 full drums are located outdoors. Prior to the movement of any container, a visual inspection will be made to determine if existing or potential for leakage is evident. Containers which are leaking or have integrity which is suspicious will be placed into an overpack container prior to movement. Containers inside the building will be moved cleanup technician using drum carts to bay boons where they can be intercepted by "bobcat" loaders equipped with drum grappling devices. The bobcat will "grapple" the container and place it onto a pallet, keeping any labeling or markings facing the outside. Once four containers are placed onto each pallet, polyethylene shrink wrap will be applied around the containers to prevent dislodging from the pallet during movement over the uneven terrain. A bobcat loader with fork attachments will then transport the full pallet to the staging/sampling area. The outdoor containers will be handled in the same manner with less manual container movement anticipated but with greater potential for leakers (resulting from exposure to the elements). Adequate space will be left between the rows of palletized containers in the staging area to allow access for technicians during container sampling activities. OHM will also inspect all on site box trailers, and remove, stage, and sample encountered containers.

2.11 EMPTY CONTAINERS

An empty contain will be any container with less than 1 inch of product remaining. Approximately 1,000 empty containers are scattered around the facility. Technicians will verify that the containers are empty, move them, and neatly stage them from inspection and viewing by the OSC.

2.12 CONTAINER SAMPLING AND ANALYSIS

The basic objective of this sampling program will be to collect a representative sample of the drum contents. Specifically, we will acquire information that will aid in determining the presence and identification of the contaminants.

Using disposable scoops for solids and glass pipettes for liquids, OHM will obtain samples from the containers. This will result in obtaining a single sample representative of the item sampled. Before obtaining a sample, technicians will document on a drum log the pertinent information about the item and contents to be sampled (e.g., size, volume/contents, color, labeling, or markings). For safety reasons, OHM will use a sparkless punch affixed to the hydraulic arm of the tracked excavator, or equivalent, to make ports in the drums. After the drums are sampled, the following will be done:

- A number will be affixed to each container (top and side)
- The drums will be sealed and covered to prevent intrusion from the elements. Drums demonstrating reactivity (e.g., fuming, water/air reactive) will be segregated and staged away from other drums
- OHM will properly package the samples, complete chain-of-custody records, and transport the samples to the analytical laboratory
- Copies of all drum logs and chain-of-custody records will be submitted to the OSC

2.13 COMPATIBILITY AND DISPOSAL ANALYSIS

2.13.1 Container Sampling

To properly classify and dispose of the waste cost effectively, OHM will perform compatibility analysis on all samples obtained.

Compatibility testing is done to separate and classify the drum material into compatible groups. The material is separated into the following classifications:

- o Organics
- o Organic peroxides
- o Inorganic neutrals and bases
- o Inorganic acids
- o Oxidizers
- o Inorganic peroxides
- o PCB-containing material
- o Inorganic cyanides
- o Organic chlorides

The order of testing for each sample is as follows:

- o Water solubility, hexane solubility, peroxide test, and oxidizers tests are performed simultaneously

- o pH (inorganic liquids only)

- o Cyanide (inorganic liquids only)

- o PCBs are run on all samples except radioactives, peroxides, and strong oxidizers

- o PCBs are run on all samples except radioactives, peroxides, and strong oxidizers

2.13.2 <u>Water Solubility</u>

Each sample is checked for water solubility by placing 1 milliliter (ml) of the sample into a culture tube containing 1 ml of deionized water. The sample is thoroughly mixed and the following observations are noted:

- o Sample soluble in water indicates inorganic or polor organic

- o Sample partially soluble in water or forms emulsion in water indicates slightly polar organic materials

- o Sample insoluble in water and less dense than water indicates is organic, nonhalogenated

- o Sample insoluble in water and more dense than water indicates halogenated organic compound

- The evaluation of gases or generation of heat indicates the sample is reactive with water

- The result is recorded

2.13.3 <u>Hexane Solubility</u>

Hexane solubility is performed by the same method except that instead of water, 1 ml of hexane is in the culture tube. The following observations are made:

- Sample is soluble in hexane indicates organic

- Sample insoluble in hexane indicates the sample is inorganic or possibly alcohol

- The result is recorded

2.13.4 <u>Peroxide Tests</u>

Peroxide tests are performed by placing 1 ml of the sample into a culture tube containing a peroxide test strip. The color changing from beige to gray or blue indicates the presence of peroxide. The result is recorded. This test is sensitive to 1 part per million (ppm).

2.13.5 <u>Oxidizer Tests</u>

The oxidizer tests are performed by placing 1 ml of the sample into a culture tube containing 1 ml of .1 normal sodium iodide or potassium iodide and then adding three drops starch solution. The starch solution is prepared by adding 5 grams of starch to 800 ml boiling water and diluting to 1 liter. The following observations are made:

- An immediate dark blue color formed indicates a strong oxidizer

- A dark blue color forming in 1/2 to 1 minute indicates a moderate oxidizer

- A light blue color formed over 1/2 to 1 minute indicates a weak oxidizer

- No color change notes nonoxidizer

- The result is recorded

2.13.6 pH Test

The pH is measured on those samples which are soluble in water and insoluble in hexane.

- o The samples with a pH of less than 4 are classified as acids
- o All samples with a pH greater than 4 and less than 10 are classified as neutrals
- o A pH greater than 10 is a base
- o The actual pH of the sample is recorded

2.13.7 Cyanide Tests

Samples which are classified as neutrals or bases are checked for cyanide by a spot test with a chloramine-T and pyridine/barbituric acid.

- o 1 ml of sample will be placed in a test tube or three drops placed on a spot plate
- o If the sample has ph greater than 10 (previous test in study), it will be neutralized with 10 percent hydrochloric acid (HCL) solution
- o Three drops of chloramine-T will be added (one drop if spot plate) and mixed
- o Equivalent drops of pyridine/barbituric acid solution will be added and mixed
- o After 1 minute, the color will be recorded
  - Pink to red, if 0.05 ppm or greater cyanide (CN)
  - Faint yellow if blank

Reagents:

- o Chloramine-T dissolve 1.0 gram in 100 ml water; prepare weekly

- o Pyridine/Barbituric acid--15 grams of barbituric acid will be placed in a flask; just enough water will be added to make wet; 75 ml of pyridine will then be added. 15 ml of HCL will be added, mixed, and cooled to room temperature. Then water will be added to 250 ml and mixed. The shelf life is 6 months in a cool, dark place.

Any positive cyanide spot test (ASTM 2036, 1979, sensitive to 0.05 ppm) is quantified with a specific ion electrode (sensitive to 10 ppm) using the following procedures:

- o 1 ml of sample is diluted to 100 ml with deionized water
- o A scoop of cadmium carbonate is added to remove any sulfur interference
- o 1 ml of .01-molar solution of EDTA is added to remove any interfering metal ions
- o 1 ml of a 10-molar sodium hydroxide solution is added as an ionization stabilizer

Specification electrode is precalibrated with a 10-ppm CN standard. Specific ion electrode is placed in the sample and a reading of the CN content is taken upon stabilization, which takes 1 to 5 minutes. Entire test is positive for CN only if greater than 10 ppm by selective ion electrode method.

2.13.8 PCB Screening

PCB screening is accomplished by analysis of sample composites. Five samples will be extracted and analyzed together to make up this composite.

- o Organic Liquids Preparation--Composite samples are prepared from one to five 1-ml volumes of the drum samples and diluted to a final volume to 10 mls. An aliquot of the thoroughly mixed composite is hydrolyzed with concentrated sulfuric acid. A 1-ml aliquot of hydrolyzed sample is passed through a microflorisil column eluting with 20 mls of hexane for cleanup. The effluent is then concentrated to a final volume of 1 ml and is ready for analysis

- Inorganic Liquid Preparation--Composite samples are prepared from 1 to 50 equal volumes of the samples. The composite sample (50 ml) is extracted in a separatory funnel with three 10-ml volumes of methylene chloride and concentrated to 1 ml. The final extract is acid hydrolyzed and cleaned up with a microflorisil column as in the organic liquid preparation

- Solid Preparation--Composite samples are prepared from one to five 1-gram aliquots of the samples. The composite sample is extracted with a 10-ml volume of hexane. An aliquot of this extract is acid hydrolyzed and cleaned up with a microflorisil column

- Composite Sample Extract Analysis--Composite extracts are screened to a limit of detection of 25 ppm for each sample that comprises the composite. Composite extracts with concentrations above 25 ppm (per sample) are broken down into individual samples which are prepared according to previously stated procedures and analyzed semiquantitatively according to the procedures outlined in EPA Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods

2.13.9 Sulfide Tests

Sulfide tests are performed by placing an aliquot of the sample into a culture tube, acidified using dilute HCl and saturating the sample with cadmium carbonate. The appearance of a yellow precipitate indicates the presence of sulfides.

2.13.10 Organochlorine Tests

Organochlorine tests are performed using the Beilstein test. The test is performed by dipping a clean copper wire into the sample and passing a wire through a propane torch flame. The appearance of a green color in the flame indicates chlorine content of greater than 1 percent.

2.13.11 Benchscale Bulking Test

Following characterization of the samples, a benchscale bulking test will be conducted. The samples are bulk tested by slowly adding a small aliquot of each drum sample in the same classification group in the order the drums will be bulked on site. A 5-minute waiting period follows each addition, during which the bulked samples are monitored for any gas evolutionor exothermic reaction.

If a reaction occurs, the bulking test is repeated without the addition of the reactive sample. Upon completion of the benchscale bulk test, the compatible groups are identified and the results are relayed to the site so safe bulking of the drums can begin. This benchscale test may allow for the bulking of drums not only together but with existing contaminated soils. This will provide economics versus sending material out in drum form.

2.13.12 Sample Data Management

Documentation is necessary to prove that the sample results reported are derived from the sample actually taken. The sample tracking scheme begins with the recording of data on a field drum sampling sheet. Various reports will be generated from the data entered, including analysis results, status and disposition of each drum, and other pertinent information.

2.14 SAMPLING AND ANALYTICAL PROCEDURES FOR DISPOSAL

Based on the results of the compatibility testing and following approval to bulk the wastes, drums will be bulked in the sequence designated by the field chemist, either together with compatible drum or soil waste.

Following bulking, samples will be obtained from the bulked waste groups by representative methods. For the solids piles, core samples will be obtained from a defined grid over the surface of the pile.

Specific analysis of these bulk composite samples will depend upon disposer criteria for analysis of wastes, as well as regulatory requirements for completing manifest and shipping papers.

OHM intends to use its main laboratory in Ohio in conjunction with OHM's analytical laboratory network to perform the required analysis for disposal. The following is list that details the analysis that may be required and the analytical method to be used should the analysis be required.

TABLE 2.1

TEST PROCEDURES

Parameters	Methods/References
Organo chlorine analysis (bomb method)	Liquids: ASTM D-808-63 Solids: ASTM D-1847-73
Organo sulfur analysis (bomb method)	Liquids: ANSI/ASTM D-129-64 Solids: ASTM D-3177-75
Flashpoint analysis	SW846, USEPA, July 1982 ASTM D-93-79 Closed cup
ph analysis	Method 150.1 (water) Method 1979 (waste) SW846, USEPA, May 1980
BTU/Lb analysis	Liquids: ASTM D-240 Solids: ASTM D-271-70 (replaced by D-3180)
Reactivity	SW846, USEPA, July 1982
Corrosivity	SW846, USEPA, July 1982
EP Toxicity analyses	SW846, USEPA, July 1982
PCBs and organo chlorine pesticides analysis	Methods 608 and 625 (water), USEPA, December 1979 SW846, (waste), USEPA, July 1981
Conductivity	Method 205 Standard Methods for the Examination of water and wastewater, 16th Edition, USEPA, 1980
Ammonia	Method 415.1, USEPA, March 1979
Total organic carbon (TOC)	Method 415.1, USEPA, March 1979
Total organic halide	SW846, USEPA, July 1982
Chloride	Methods 325.3, USEPA, March 1979

TABLE 2.1 (CONTINUED)

TEST PROCEDURES

Parameters	Methods/References
Sulfate	Methods 375.3 and 375.4, USEPA March 1979
Sulfide	Method 376.1, USEPA, March 1979
CN	Water Methods 335.1 and 335.2; USEPA, March 1979
Chemical oxygen demand	Methods 410.1, USEPA March 1979
Petroleum hydrocarbons	Method 418.1, USEPA, March 1979
Individual petroleum	ASTM D-3328-78 (water) a comparison of methods for the analysis of hydrocarbons in marine sediment (sediment), USEPA Environmental Research Laboratory, South Ferry Road, Narragansett, Rhode Island 02882, October 1978
Percent water determination	Karl Fisher Titration, ASTM E-203-75
Organic peroxides	ANSI/ASTM E-298-68
USEPA Priority Pollutants	Federal rigser (water), Volume 44, USEPA, December 1979, revised July 1982, 600/4-82-057 (waste), SW846 USEPA, July 1982
Specific gravity	Method 22, Standard Methods for the examination of water and Wastewater (liquids), USEPA, 16th Edition, 1980
Residual USEPA, March 1979	
o Filterable	Method 160.1
o Non-filterable	Method 160.2
o Total	Method 160.3
o Volatile	Method 160.4
o Settable matter	Method 160.5

TABLE 2.1 (CONTINUED)

TEST PROCEDURES

Parameters	Methods/References
Organic kjeldahl nitrogen	Method 351.2, USEPA, March 1979
Phoshorous	Methods 351.1 and 365.4, USEPA March 1979
Phenolics, total recoverable	Methods 420.2, USEPA March 1979
Oil and grease, total recoverable	Methods 420.2, USEPA March 1979
Fluorides	Method 340.2, USEPA, March 1979
Nitrate/Nitrate	Method 353.2, USEPA, March 1979
Waste and sediment	ASTM D-1796
Ash ASTM D-482	
Bioassay, Fathead Minnow two tanks and control	Daily replacement (96 hours)

OHM will solicit a minimum of 3 quotes from qualified laboratories to perform the compatibility analysis.

2.15 GENERAL ANALYTICAL REQUIREMENTS FOR DISPOSAL ANALYSES

2.15.1 Method Selection

All samples are to be prepared and analyzed according to SW-846 methods where available. If no SW-846 method may be applied, another EPA approved method may be used. If no EPA methods are available, a suitable ASTM or APHA method may be used. Methods selected must be capable of achieving the listed LOD for clean samples and should be selected so as to minimize the effects of matrix interferences.

2.15.2 Reportables

One report should be generated per waste stream. All reports must include a cover page (listing the project references, the laboratory, start and complete dates, sample numbers, analysis type, and a signature of a responsible person who has reviewed the report), a methods summary, results reported on a wet weight (as is) basis on tables by section with LODs listed; and QC information. QC may be reported along with the results or in an appendix. QC should include: the blank; blank spike percent recovery; matrix spike percent recovery; matrix spike duplicate; surrogate % recovery; and tune files, where applicable. QC reportables may be deleted only when so instructed by the OSC (on ERCS jobs) or by the project manager.

2.15.3 Organics

Priority Pollutant (PP), Hazardous Substance List (HSL), and Halogenated Organic Compounds ({HOC} Appendix III) Organics are to be analyzed as target compounds* using GC/MS to an LOD of nominally 10 ppm. GC should be used for target pesticides and herbicides to the LOD listed. Non-target compounds observed by the GC/MS should be tentatively identified by computer search against the NBS library for all peaks >25% of the nearest internal standard. Related peaks may be grouped for semi-quantitiation and reporting. Where individual tentative identifications may be made with >80% confidence as CAS number should also be reported.

2.15.4 Additional Tests

Some additional tests may be required under certain conditions. For example, Landban TCLP parameters may be required when solvents are expected in a wastewater wastestream, or the source of an oxidizing potential needs to be determined prior to profiling. Any additional testing required should be ordered initially to ensure all results will be available when required.

*An EICP screen for Dioxins/Furans is sufficient, positives are to be reordered and reanalyzed by Method 8280.

2.16 WASTE LOADOUT

Upon receipt of the compatibility analysis performed on the drum waste it can then be more accurately predicted on the amounts and types of waste which are compatible. Based on the volumes of waste which are compatible, bulking may be a cost-effective option. If bulking is not an option (due to low volumes of compatible waste(s)), drums can be shipped as is or overpacked prior to transport and disposal. OHM proposes to use the existing concrete truck loading ramp for the loadout of the drums.

Prior to loadout, proper labeling and disposal codes will be affixed to each container. Manifests will be prepared and submitted to the OSC for review and signature as generator.

If capatability results determine that bulking can be cost-effective, OHM will first conduct a benchscale bulking test as a precautionary measure to prevent inadvertent mixing of noncompatable materials. Bulking can be performed for both liquids and solids.

OHM's approach for liquid bulking utilizes a compatability chamber which is designed to withstand heat reactions, and is equipped with a nonsparking bar scraper which prevents sludges from entering the collection chamber.

OHM can utilize a tracked excavator equipped with a hydraulic drum grappler or a stainless steel diaphram pump to dump or pump the compatible drum contents into the chamber. Once all the drums from a given compatible group are combined in he chamber, a representative sample will be obtained and analyzed for the appropriate disposal parameters.

2.17 TEARDOWN/DEMOBILIZATION

Upon completion of the cope of work to the satisfaction of the OSC, OHM will commence the decontamination of equipment and tools utilized during the performance of the scope of work. All work areas will be policed and secured. Personnel and equipment will then be demobilized to their respective origins.

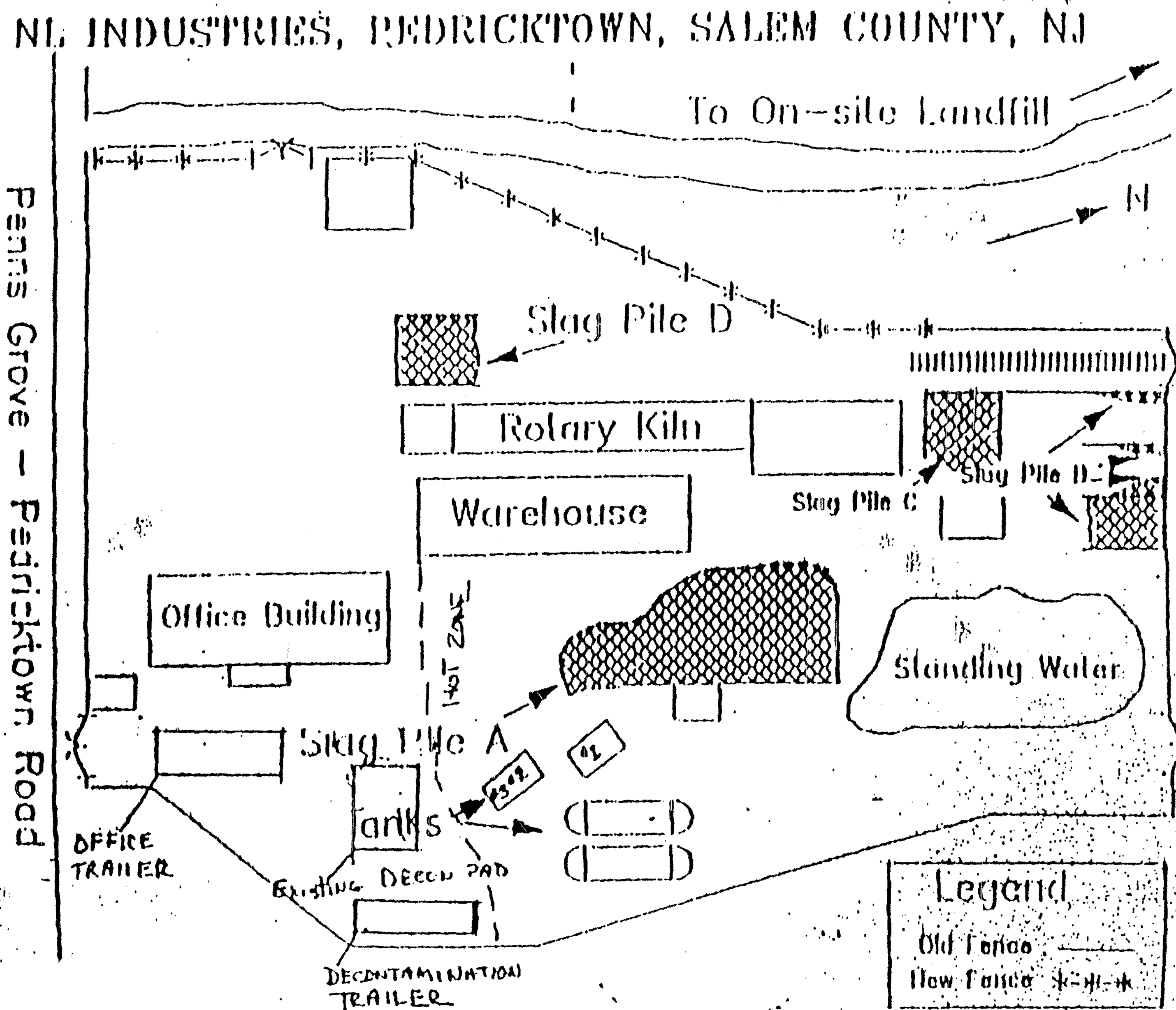
3.0 PROJECT SCHEDULE

OHM anticipates on performing the scope of work in 30 days. A breakdown of the proposed schedule per work task is as follows:

Task	Anticipated Duration in Days
Site security	Project duration
Office trailer set up	1 day
Mobilization/site preparation	1 days
Install metal closures	3-5 days
Encapsulantation of slag piles	2-3 days
Prepare materials	5-7 days
Flood controls	2-3 days
Staged sample Containers	3-5 days
Unknown container handling	1 day
Waste loadout (drums/bulking)	3-5 days
Teardown/demobilization	1 day

OHM will maintain flexibility for either increasing crew size or work hours if site conditions warrant, to meet any time restraints requested by the OSC.

LG:ddc



APPENDIX 6 SITE MAP with OFFICE and DECON SETUP

WESTON

SPILL PREVENTION & EMERGENCY RESPONSE

FIGURE 2

OCT 18 '89 14:41

100168

OCT 18 '89 14:42

1001769

WESTON

CLIENT/SUBJECT ML Industries

TASK DESCRIPTION Door drawings

PREPARED BY SAS SH DATE 5-24-89

MATH CHECK BY DATE

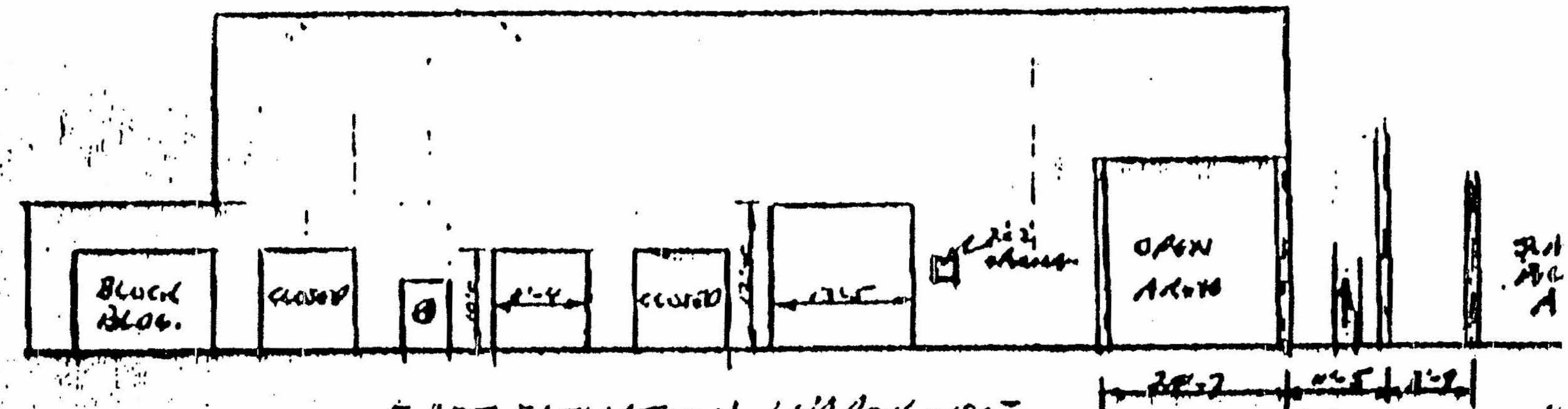
METHOD REV. BY DATE

W.O. NO.

TASK NO.

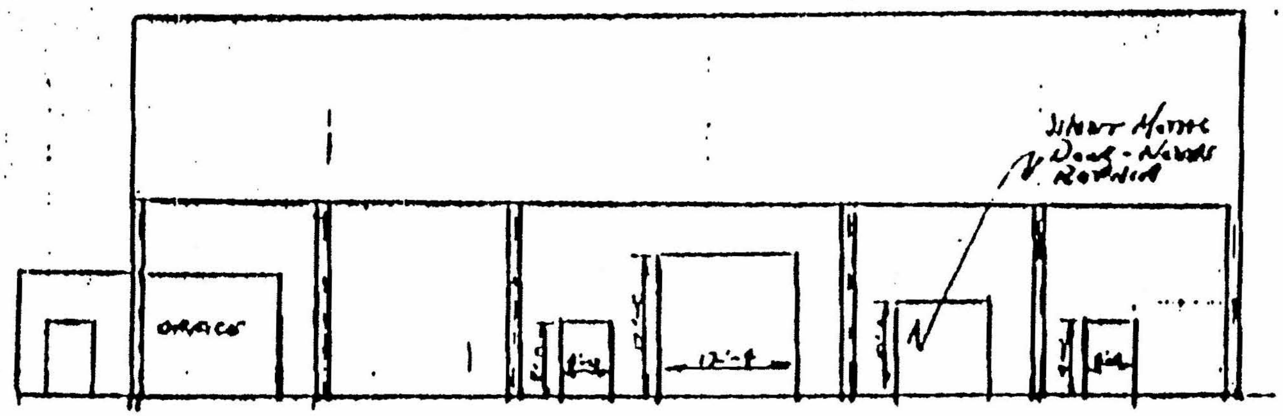
SHEET 1 of 4

APPROVED BY DEPT DATE



EAST ELEVATION - WAREHOUSE

① HAS DOOR THAT CLOSES - REQUIRES A LOCK.

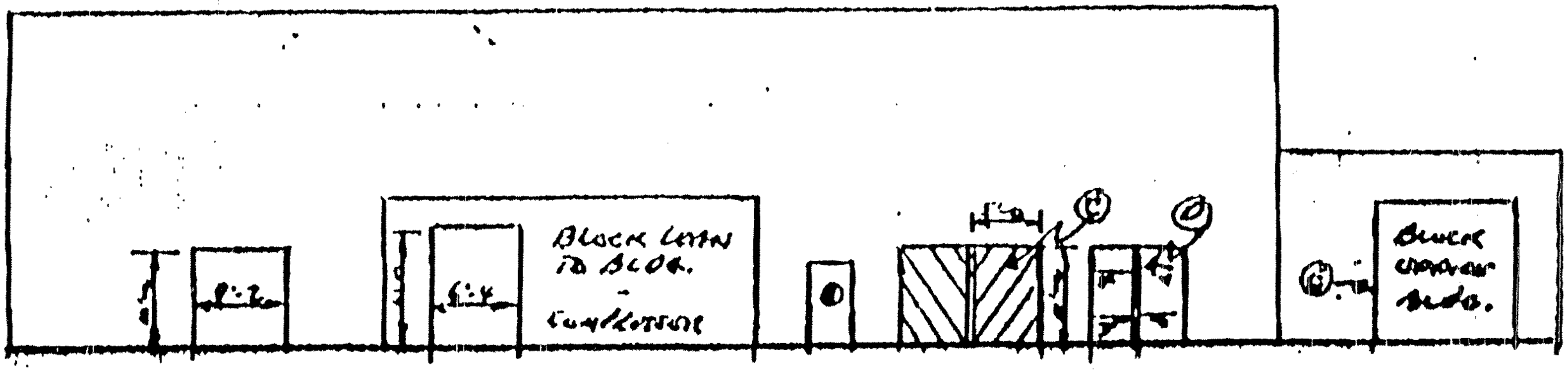


SOUTH ELEVATION - WAREHOUSE

P.4
100170
SHEET 2 of 7

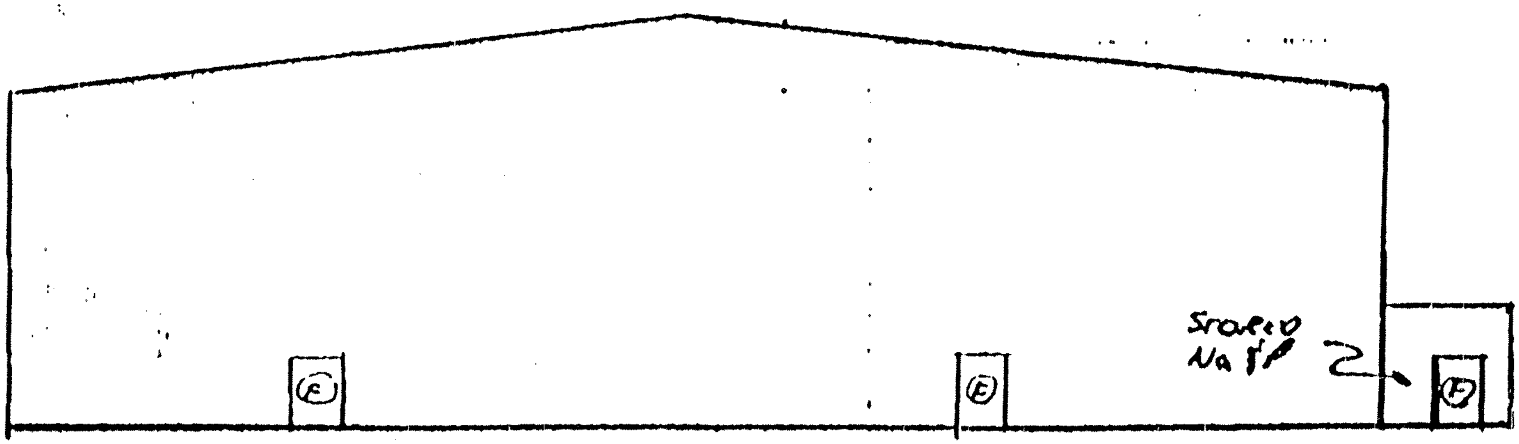
WESTON

CLIENT/SUBJECT NL Industries
TASK DESCRIPTION Door Openings
PREPARED BY Smith DEPT ___ DATE 8-24-89
MATH CHECK BY ___ DEPT ___ DATE ___
METHOD REV. BY ___ DEPT ___ DATE ___
W.O. NO. ___
TASK NO. ___
APPROVED BY ___ DEPT ___ DATE ___



WEST ELEVATION - WAREHOUSE

Ⓐ - Steel Door - Tack weld shut
Ⓑ Chain Link Fence Framed Door - Needs Repair.
Ⓒ Plywood Doors - OK.
Ⓔ New 3x8 Door



NORTH ELEVATION - WAREHOUSE

Ⓕ 3x8 Metal Personnel Doors - Locked.

OCT 18 '89 14:42

100171

SHEET 3 of 4

W.O. NO.

TASK NO.

APPROVED BY

DEPT / DATE

WESTON

CLIENT/SUBJECT NL INDUSTRIES

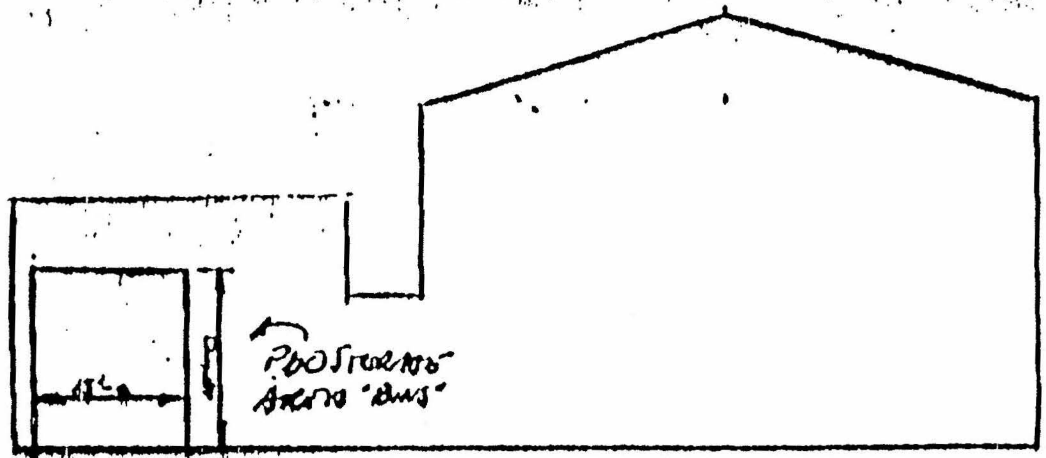
TASK DESCRIPTION Door Openings

PREPARED BY BDS JH DEPT DATE 8-21-84

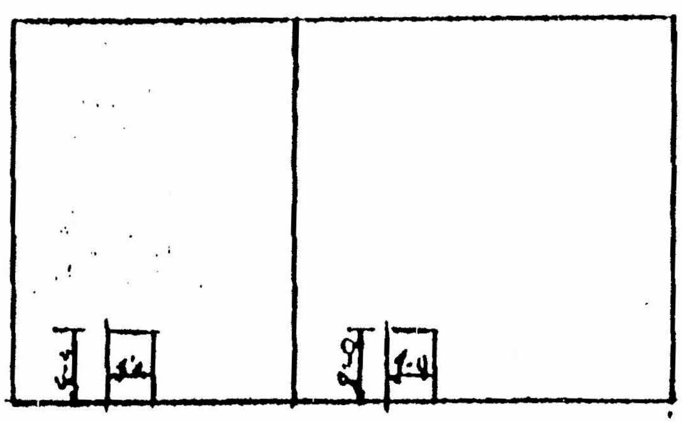
MATH CHECK BY DEPT DATE

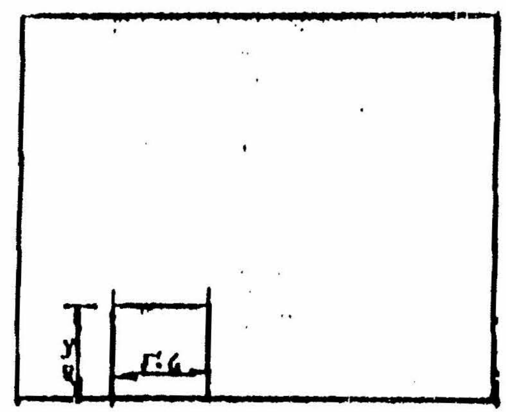
METHOD REV. BY DEPT DATE

OCT 18 '85 14:42



WEST ELEVATION - BUFFER STORAGE BLDG.





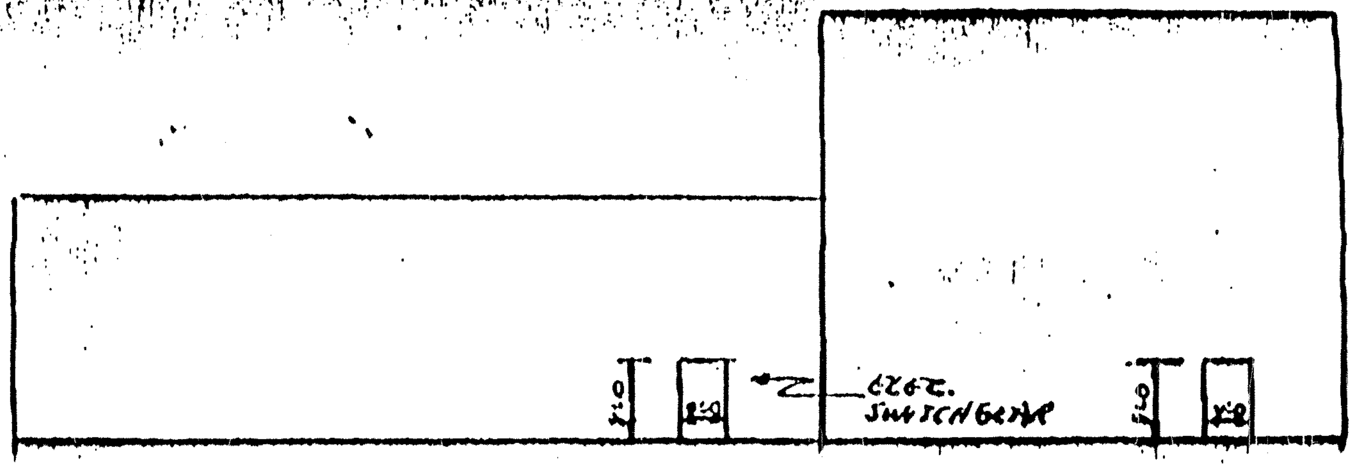
DECASING BLDG. WEST ELEVATION — DRYER BLDG.

1001172

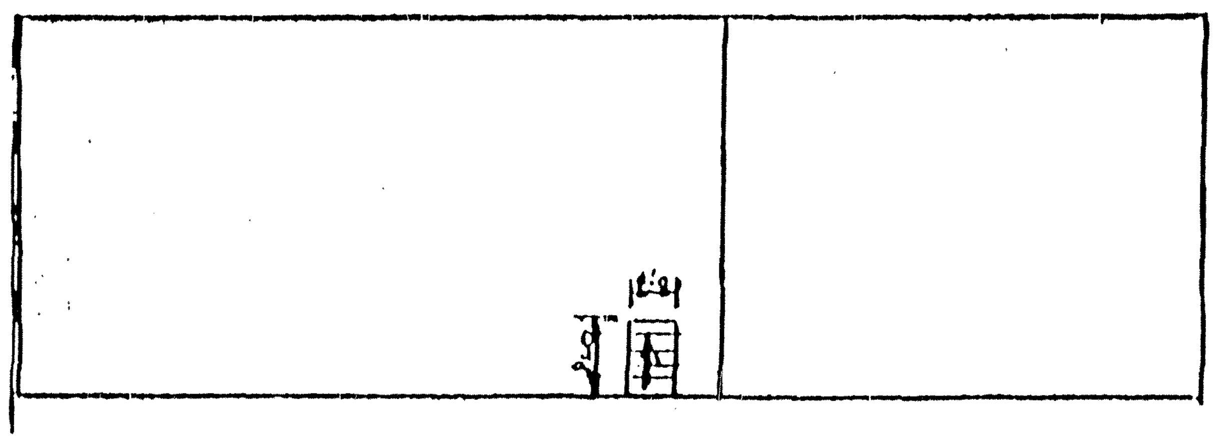
SHEET 4 of 4

WESTON

CLIENT/SUBJECT NL INDUSTRIES W.O. NO.
TASK DESCRIPTION DOOR OPENINGS TASK NO.
PREPARED BY SOITH DEPT DATE 8-24-84
MATH CHECK BY DEPT DATE
METHOD REV. BY DEPT DATE
APPROVED BY DEPT DATE



EAST ELEVATION - DRYER BLDG.



NORTH ELEVATION - BUFFER SITE & DRYER BLDG.

OCT 18 '89 14:43

Estimate closing bldg openings.

	W	H	FT	FT²	
Pg 1	8-4	10-0	35	80	
	13-5	12-0	50	165	250
	2-0	2-0	10	5	
	4-0	8-0	25	35	
	12-4	12-0	50	145	215
	4-0	8-0	25	35	
Pg 2	9-2	10-0	40	90	
	6-4	6-0	25	35	175
	5-0	10-0	30	50	
Pg 3	15-0	15-0	60	225	
	4-0	8-0	25	35	
	4-0	8-0	25	35	350
	5-6	10-0	30	55	
Pg 4	4-0	8-0	25	35	
	4-0	8-0	25	35	1[illegible]
	4-0	8-0	25	35	

505

109[illegible]

x1.[illegible]

Table I

NL Industries, Inc. Superfund Site
Phase II Removal Action

Hazardous Materials for Removal

Material	Estimated Quantity	Estimated Cost
Sodium Nitrate	(120) 50 lb. bags	$ 2,000
Metallic Arsenic	50 lbs.	$ 5,000
Asbestos	1 cu. yd.	$ 5,000
Red Phosphorus	(6) 20 gal. pails	$ 25,000
Sodium (Metal) Sodium (Powder)	(6) 3 gal. pails (1) 55 gal. drum	$ 25,000
Gas Cylinders	(7) 80 cu. ft.	$ 25,000
Gamma Source	1 flowmeter	$ 5,000
Petroleum Products	2,000 gals.	$ 5,000
Sodium Hypochlorite	100 lbs.	$ 1,000
Copper Sulfate	(5) 55 gal. drums	$ 2,000
TOTAL		$100,000

APPENDIX C MATERIALS FOR RECYCLE/DISPOSAL

100175

S&D

S&D Engineering Services Inc.
173 Essex Avenue
Metuchen. NJ 08840
(201) 549-8778

April 10, 1989

Eugene G. Dominach
Project Manager
Site Mitigation Section
US EPA Region II
Woodbridge Ave.
Edison, NJ 08837

Re: Delivery Order: 0102-02-001

Dear Gene:

Attached is the proposed work plan for spray coating of the slag piles at the NL Industries site. If this work plan meets with your approval please forward your approval with your work order. If you have any questions or comments please call me.

Sincerely,

S&D ENGINEERING SERVICES, INC.

Jeremiah J. Laurizio

Jeremiah J. Laurizio
Response Manager

JJL/cn

NL INDUSTRIES SPRAY ENCAPSULATION

WORK PLAN

Delivery Order: 0102-02-001
Contract Number: 68-W8-0102
EPA OSC: Eugene Dominach
S&D Response Manager: Jerry Laurizio

Objective: To encapsulate the on site metal slag piles with a impervious coating to prevent run-off and airborne release of the slag material.

Focus of Action: The activities include only the following items:

1. Scraping up any migrated material from the slag piles

2. Replacing of the migrated material on the slag piles

3. Removing any obstacles which may prevent or not allow a sufficiently impervious coating on the piles

4. Spraying a encapsulate coating on the slag piles as directed by the EPA.

Listed below is the overall work schedule. The specific tasks are detailed elsewhere in this work plan.

Task	Description	Estimated Time Required (Days)
1)	Preparation & Planning	2
2)	Mobilization & Set up	1
3)	Run off Material Consolidation	1
4a)	Encapsulate Spraying - Asphaltic Product	3
4b)	Encapsulate Spraying - Cementitious Product	3
5)	Clean up, Decon, Demobilization	1/2

Task 1 Preparation and Planning

The preparation and planning stage will be used to locate all of the required equipment and materials. Arranging for overnight accommodations, labor and timely delivery of all rented equipment will also be accomplished at this time. The Response Manager with assistance from a Field Clerk will be performing this task.

One to two days will be required to complete this task.

Task 2 Mobilization and Set Up

During the mobilization phase of this task all necessary equipment and labor will be brought to the site. The set up of the command and decontamination areas will be performed in this task. See the attached figure for the locations of the decon and support areas. The decontamination area will be set up adjacent to the former loading area. This area was chosen to allow the small amounts of contaminants and encapsulating material to be washed into the pond which has formed in the loading area depression. Any last minute equipment and material needs will also be addressed at this time.

The entire work crew consisting of the Response Manager. Equipment Operator, and two Clean up Technicians will be performing this task.

Task 3 Runoff Material Consolidation

The equipment operator, utilizing a bobcat or other similar piece of equipment will scrape up and replace any slag material which has run off the piles. At this time the cleanup technicians will rake down any vertical slag surfaces. This will prevent any encapsulated surfaces to become exposed should the vertical surfaces collapse.

Either Task 4A or 4B will be chosen by the USEPA.

Task 4A Encapsulate Spraying using Semi-Pave Asphaltic Material

The spraying of the encapsulating material will occupy the majority of the remaining project time. The asphaltic based coating will be supplied by Witco Chemicals. The spraying operation will be a batch type process. The encapsulate material will be mixed with water in a ratio of 1 part Semi-Pave to approximately 3 parts water in a 200 gallon tank. The mixture will be gravity fed to a centrifugal pump for spraying. A boom truck with cherry picker will be used to spray the tops of the slag piles and other hard to reach places.

A Response Manager, Equipment Operator and two Clean up Technicians will be required for this task.

Task 4B Encapsulate Spraying using Cementitous Material

The spraying of the encapsulating material will occupy the majority of the remaining project time. The cementitious based coating will be supplied by Soilfix. The spraying operation will be a batch type process. The encapsulate will be mixed in a six cubic foot mortar mixer. The cementitious mixture will then be poured into the spraying equipment for application onto the slag piles. A boom truck with cherry picker will be used to spray the tops of the piles and other hard to reach areas.

A Response Manager, Equipment Operator and two Clean up Technicians will be required for this task. A representative of Soilfix will also be on site during the first day of spraying to provide technical assistance.

Task 5 Clean up, Decon, Demobilization

A decon area will set up adjacent to the former loading area. This area was chosen to allow the small amounts of contaminants and encapsulate materials to be washed into the pond which has formed in the loading area depression.

All equipment will be decontaminated with a pressure washer prior to demobilization. The command area will be broken down and demobilized. All trash and debris will be collected and transported off-site.

Cost Estimate - Based on 10 hour days

Task 5 Clean up, Decon, Demobilization

A decon area will set up adjacent to the former loading area. This area was chosen to allow the small amounts of contaminants and encapsulate materials to be washed into the pond which has formed in the loading area depression.

All equipment will be decontaminated with a pressure washer prior to demobilization. The command area will be broken down and demobilized. All trash and debris will be collected and transported off-site.

Cost Estimate - Based on 10 hour days

Equipment

Item	Description	Time Required		
49	Box Truck	1 week	$ 963.20	963.20
54	4wd Suburban	1 week	456.80	456.80
106	Barrel Pump	4 days	158.72	158.72
169	Pressure Washer	1 week	155.60	155.60
210	Air Compressor	4 days	364.21 *	0
298	Field Computer	1 week	108.40	108.40

Item	Description	Time Required		
–	Bobcat (Rental)	1 week	500.00	500.00
–	Spray Apparatus	4 days	200.00 **	550.00
–	Boom Truck (Rental)	1 week	735.00	735.00
			$3,641.93	$3,627.00

* Provisional Rate
** Estimated, Rate will be determined

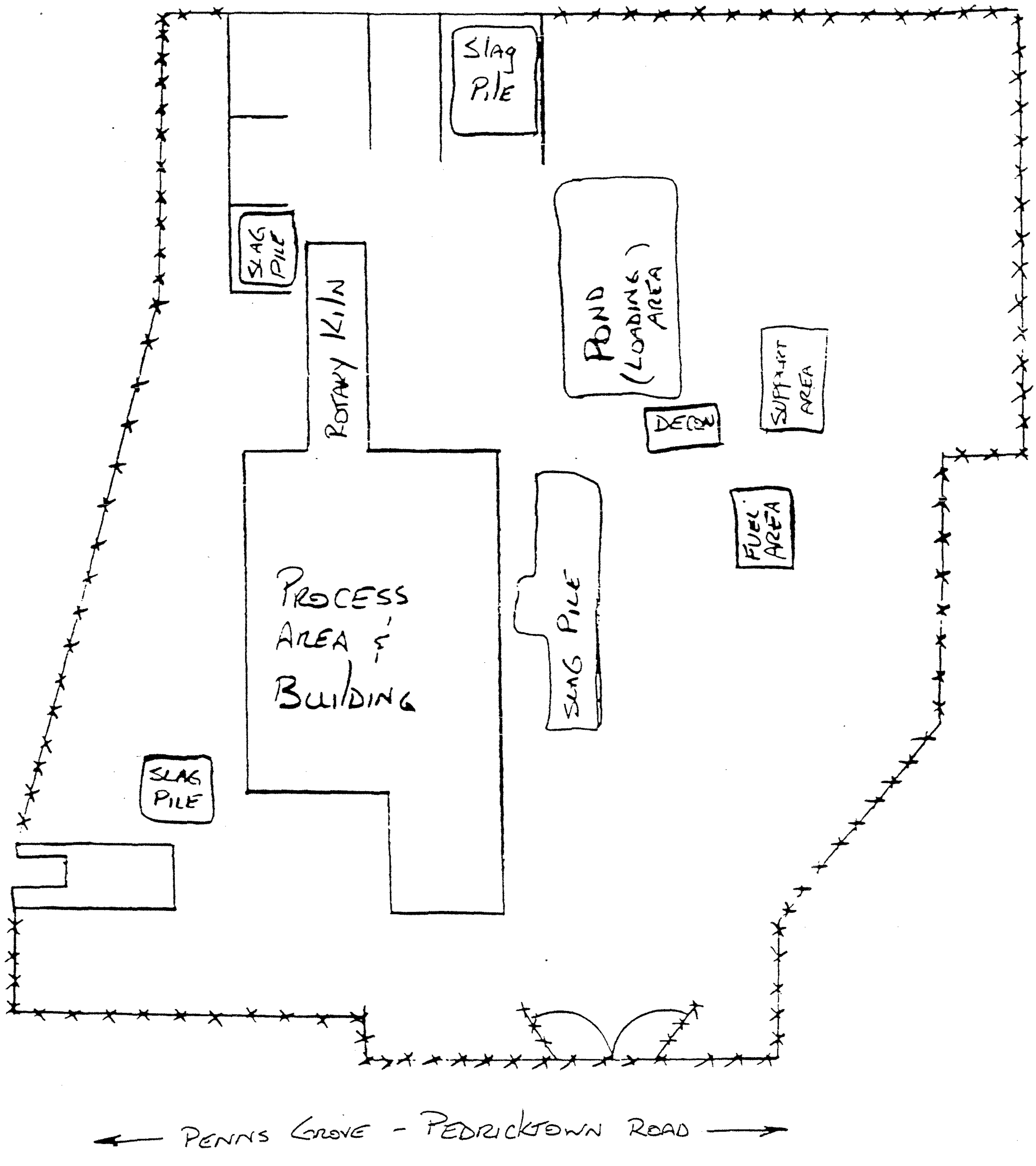
Materials and Supplies

Encapsulate Material	20 Drums @ $110/drum	$2,200.00	
Encapsulate Material	40,000 lbs @ $0.32/lb		$13,200.00
Shipping		1,000.00	700.00
Mixing Vessels	2 @ $350 each	700.00	0
Respirator Cartridges	10 cases @ $36/case	360.00	360.00
Polytyveks	2 cases @ 173.75	347.50	347.50
Disposable Overboots	1 case @ 400.00	400.00	400.00
Nitrile Gloves	4 bags @ 20.00	80.00	80.00
Surgical Gloves	1 box @ $13.50	13.50	13.50
Port-o-John	1 box @ $140.00	140.00	140.00
Miscellaneous		300.00	300.00
Total Materials and Supplies		$5,541.00	15,541.00
9.36% G&A on Materials, Supplies, Rentals & Per diem		793.35	1,837.00
Total		$23,471.20	$35,100.63

Note: Approximately $31,700.00 remain from the initial funding.

100181

NL Industries Site Plan



Not to Scale

NEWS Witco

For Immediate Release

Contact: Jacalyn Langenthal
212 605-3941

Peter Rankin
212 887-8052

NEW SURFACING MATERIAL COMBINES DUST
CONTROL WITH NEAR PAVEMENT QUALITY

Witco Corporation's Golden Bear Division has introduced a durable, cost-effective road surface treatment designed for soil and aggregate haulroads which not only provides a riding course capable of withstanding the effects of heavy vehicles and machinery but also eliminates environmentally unacceptable dust as well.

The new dual-purpose surface treatment, marketed under the brandname Semi-Pave®, is specifically designed for the mining, logging and agricultural industries as well as rural road surfaces requiring surface treatment and dust control.

Manufactured from heavy naphthenic oil resins, the material reportedly creates a near pavement-like surface that will withstand the extremely deleterious effects of heavy machinery traffic. Its durability, according to Witco, results from its ability to penetrate effectively the road surface, binding the soil and aggregate, resulting in an all-weather, dust-free surface.

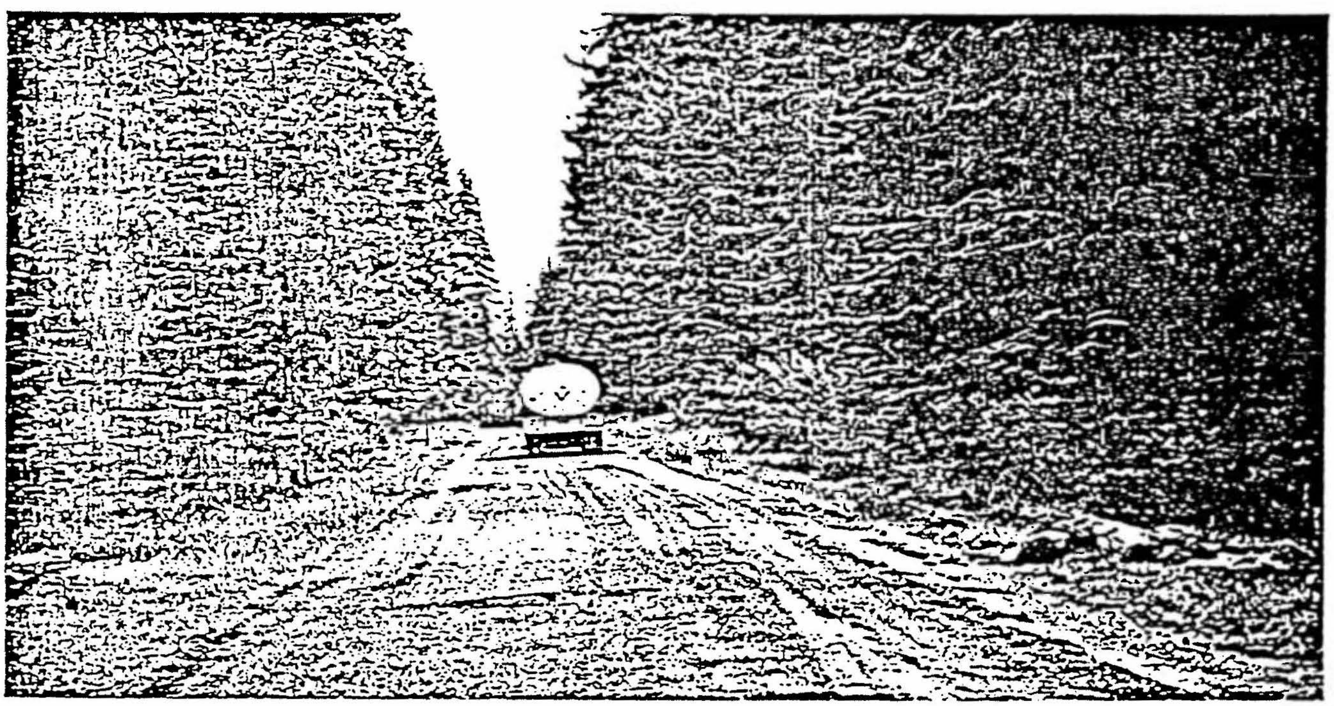
Once applied, the non-water-soluble material will not leach from the road surface and cures to a tack-free surface finish. It is non-toxic, non-corrosive and is environmentally safe, according to Witco.

-more-

Semi-Pave surfacing agent is supplied as a cold-water emulsion. Therefore, it can easily be further diluted with water, improving the economics of this road-surface material. Witco recommends a 1:2 oil to water dilution ratio and an application rate of approximately 0.5 gallons/square yard. The follow-up surface treatments are applied as needed at dilution and application ratios that vary according to local conditions.

For further information: Witco Corporation, Golden Bear Division, P.O. Box 456, Chandler, AZ 85244-0161.

# # #



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SEMI-PAVE[R]

Semi-pave is a new product developed to meet the need for dust control on very heavy haul roads. When applied to an aggregate or soil-aggregate road surface, it agglomarates the particles into a dense, durable mat, eliminating dust and providing a tough surface that withstands displacement.

Semi-pave is a water emulsion. It consists of a heavy petroleum resin and wetting agents to enhance soil penetration and uniform coating of the particles. The product can be stored, providing it is protected against freezing, for up to four months. It is readily mixed with water to extend coverage, control film thickness and achieve deep penetration.

The performance life of Semi-pave is dependent on soil type, rate of application and traffic characteristics. An initial application followed by maintenance applications, when it is necessary to restore surface smoothness or to remove spillage from haul vehicles, will develop a near pavement quality surface that will not leach out when it rains, is not corrosive and is environmentally safe. The attached specifications and material safety data information verify these facts.

For best performance, we recommend that the haul road be pre-wet and shaped to the desired grade and surface smoothness. Semi-pave diluted with water at the rate of from 1:1 to 1:4 is then applied in one or more applications at a total liquid content of from .50 to 1.00 gallons per square yard of treated surface. An asphalt distributor truck or a water truck with pressure distribution is suitable to mix and apply the liquid. Maintenance applications should be applied in conjunction with routine reshaping.

Semi-pave may be applied as a water replacement at a dilution rate of one part concentrate to 9 parts water. This technique works well when regular daily watering has been the method of dust control. Over a short time (5 to 7 days) the need for dust control will have diminished to maybe once a week or only when spillage and float create a new source of dust.

Specifications for Semi-pave

Haulroad dust control

100185

Golden Bear Division, Witco Corporation
P.O. Box 456, Chandler, AZ 85244 602-963-2267

Property	Test Method	Specifications
Viscosity @ 25°C, SFS	ASTM D-244	15-100
Sieve Test, %W	ASTM D-244 (Mod)[1]	0.1 Max.
Particle Charge Test	ASTM D-244	Positive
Cement Mixing Test, %W	ASTM D-244	2.0 Max.
5-day Settlement Test, %W	ASTM D-244	5.0 Max.
Residue, %W	ASTM D-244 (Mod)[2]	60 Min.
Tests on Residue from Distillation:		
Viscosity @ 60°C, cSt	ASTM D-2170	4500-8500
Flash Point, COC, °C	ASTM D-92	225 Min.
Asphaltenes, %W	ASTM D-2006-70	2.0 Max.
Saturated Hydrocarbons, %W	ASTM D-2006-70	15 Max.
Specific Gravity	ASTM D-1298	1.010-1.050

1 Test procedure identical with ASTM D-244 except that distilled water shall be used in place of two percent sodium oleate solution.

2 ASTM D-244 Evaporation Test for percent of residue is modified by heating 50 gram sample to 149°C (300°F) until foaming ceases, then cooling immediately and calculating results.

*** Note: For gal/ton conversion use 238 gal/ton.

Witco

1006186

Product Code: SEMI-PAVE

HAZARD RATING

N 4 - Extreme
F 3 - High
P 2 - Moderate
A 1 - Slight
0 - Insignificant

Fire: 0
Toxicity: 1
Reactivity: 0
Special

DIVISION AND LOCATION---SECTION I

Division: GOLDEN BEAR
Location: OILDALE, CA
P.O. BOX 5446,MANOR & NORRIS ROADS,OILDALE,CA,93388-5446
Emergency Telephone Number: (805) 393-7110
Transportation Emergency: CHEM TREC 1-(800) 424-9300 (U.S. and Canada)

CHEMICAL AND PHYSICAL PROPERTIES---SECTION II

Chemical Name:
Petroleum Hydrocarbon in Water Emulsion
Formula: not applicable
Hazardous Decomposition Products:
carbon monoxide and carbon dioxide from burning.
oxides of nitrogen
oxides of sulfur
Incompatibility (Keep away from):
strong oxidizers such as hydrogen peroxide, bromine, and chromic acid.

Toxic and Hazardous Ingredients:	CAS #
heavy naphthenic distillate (petroleum) and/or	64742-34-3
heavy naphthenic extract (petroleum)	64742-11-6

Form: Oily liquid emulsion   Odor: no objectionable odor
Appearance: Color:
Specific Gravity (water=1): about 1
Boiling Point: 100°C (212°F)
Melting Point: not applicable
Solubility in Water (by weight %): readily dispersible
Volatile (by weight %): less than 45 at 25 °C
Evaporation Rate: (water = 1) 1
Vapor Pressure (mm Hg at 20°C): same as water
Vapor Density (air=1): same as water
pH (as is): 4.5 to 6.5
Stability: Product is stable under normal conditions
Viscosity SUS at 100°F: Greater than or = to 100
Other physical properties:
Viscosity = or greater than 18.6 cSt at 40°C

(Continued on next page)

FIRE AND EXPLOSION DATA---SECTION III

Special Fire Fighting Procedures:
none

Unusual Fire and Explosion Hazards:
Dense smoke. Fire fighters should wear self-contained breathing apparatus.

Flashpoint: not applicable

Flammable limits %:
no data available

Extinguishing agents:
Drychemical or Waterspray or CO_2 or Foam
Water may cause frothing.
Water may be ineffective.
Exposed material may be cooled with water.

HEALTH HAZARD DATA---SECTION IV

Permissible concentrations (air):
If used in applications where a mist may be generated, observe a TWA/PEL of 5 mg/m^3 for mineral oil mist (OSHA and ACGIH).

Chronic effects of overexposure:
Prolonged skin contact may cause irritation and under extreme conditions, skin cancer. See section IX comments.

Acute toxicological properties:
no data available

Emergency First Aid Procedures:
- Eyes: Immediately flush with large quantities of water for at least 15 minutes and call a physician.
- Skin Contact: Wash with soap and water.
- Inhalation: Remove victim to fresh air.
- If Swallowed: Contact a physician immediately.

SPECIAL PROTECTION INFORMATION---SECTION V

Ventilation Type Required (Local,mechanical,special):
Local if necessary to maintain allowable PEL(permissible exposure limit) or TLV(threshhold limit value)

Respiratory Protection (Specify type):
Use NIOSH/OSHA approved respirator with organic vapor cartridge if vapor concentration exceeds permissible exposure limit

Protective Gloves: oil resistant

Eye Protection: chemical safety goggles.

Other Protective Equipment:
none

(Continued on next page)

100188

HANDLING OF SPILLS OR LEAKS---SECTION VI

Procedures for Clean-Up:

In case of spill or leak absorb on an inert material such as earth, sand or vermiculite; sweep up and dispose of in accordance with federal, state and local regulations. If spilled into water, remove bulk of the product by skimming.

Waste Disposal:

Dispose of in accordance with all applicable federal, state and local regulations.

SPECIAL PRECAUTIONS---SECTION VII

Precautions to be taken in handling and storage:

Avoid prolonged or repeated contact with skin or breathing of vapors, mists or fumes. Launder contaminated clothing before reuse. Keep containers tightly closed. Avoid strong oxidizers. Eliminate all sources of ignition such as flames or sparks.

TRANSPORTATION DATA---SECTION VIII

D.O.T.: Not Regulated
Reportable Quantity: not applicable
Freight Classification: Petroleum Oil,n.o.i.b.n.
Special Transportation Notes:

none

COMMENTS---SECTION IX

This product contains petroleum oils similar to ones categorized by the International Agency for Research on Cancer (IARC) as causing skin cancer in mice after prolonged and repeated contact. Any potential hazard can be minimized by using recommended protective equipment to avoid skin contact and by washing thoroughly after handling.
Persons susceptible to dermatitis (skin rash) may aggravate their condition by skin contact with this product.

(Continued on next page)

WITCO MATERIAL SAFETY DATA SHEET

Product Code: SEMI-PAVE

Signature: J.T.Cook James T Cook

Title:
MANAGER OF QUALITY CONTROL

Original Date: 12/14/82 Sent to: Date: 4-3-89

Revision Date: 05/15/86 MR. EUGENE DOMICH

Supersedes: 07/25/85 U.S.EPA

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, express or implied, and we assume no responsibility for any loss, damage, or expense, direct or consequential, arising out of their use.

SAMPLING QA/QC WORK PLAN

NL Industries, Inc. Site

Pedricktown, Salem County, New Jersey

Document Number: TAT-02-F-6925

Prepared for:

U.S. Environmental Protection Agency
Region II - Removal Action Branch
Edison, New Jersey

Prepared by:

Roy F. Weston Inc.
Region II - Technical Assistance Team
Edison, New Jersey

EPA	TAT	TAT
Eugene Dominach On-Scene Coordinator EPA Removal Action Branch	Ron Starks Project Manager Roy F. Weston	Victor Vicenty Project Coordinator Roy F. Weston
Date: 10-8-93	Date: 10-6-93	Date: 6 Oct 1993

1.0 PROJECT DESCRIPTION

A. Site Background

The NL Industries site is an abandoned lead smelting facility situated on 43.7 acres of land 1.5 miles from the Delaware River in Pedricktown, Salem County, New Jersey (see Figure 1). The site is situated over the Cape May aquifer and adjacent to West Creek, a tributary of the Delaware River located less than a mile from the site. The site is positioned in a land parcel zoned for industry development as park. The area includes present or former operations of the following corporations: Airco (inactive facility); B.F. Goodrich; Browning-Ferris Industries (inactive facility); and Exxon, Tomah Division (inactive facility). Railroad tracks, owned by Conrail, run through the property separating a closed RCRA landfill to the north from the smelting area located to the south.

In 1972, the facility began recovering lead from used automotive batteries for recycling. The batteries were drained of sulfuric acid, crushed, and the separated rubber and plastic parts were buried in the on-site landfill to the north of the smelting operations. The remaining material was used in the lead recovery process at the on-site smelting facility.

NL terminated lead smelting on May 25, 1982. On October 6, 1982, NL signed an Administrative Consent Order (ACO) with the New Jersey Department of Environmental Protection (NJDEP), currently the New Jersey Department of Environmental Protection and Energy (NJDEPE), whereby NL agreed to undertake a variety of activities in order to address environmental conditions at the site. In anticipation of the transfer of the property to National Smelting of New Jersey (NSNJ) the order was amended on February 10, 1983 to distribute the responsibilities for the various activities between NL and NSNJ.

NSNJ filed for bankruptcy under Chapters 11 and then 7, on March 5th and 27th, 1984, respectively, and ceased operations. NL Industries agreed in an Administrative Order of Consent with USEPA to conduct a Remedial Investigation (RI)/Feasibility Study (FS) effective on April 30, 1986. The Remedial Investigation Report was approved on July 8, 1991.

B. **Objective of Project**

The objective of this sampling QA/QC work plan is to characterize the magnitude and extent of contamination of lead levels in sediment and soils of the West Creek.

The analytical results will be used to calibrate XRF field screening equipment for the future stream enlargement project.

The Salem County Mosquito Commission has proposed to widen and deepen the West Creek to alleviate flooding and improve drainage in upstream areas of the site.

The West creek crosses the NL Industries site. Earlier investigations indicated that sediments in the stream contained lead in excess of 26,000 ppm as a result of the smelting and disposal activities previously performed at the site.

Due to the elevated lead levels in the stream sediments the project cannot be safely undertaken by the County. Removal action has been referred to EPA to ensure proper disposal of excavated materials.

The county is clearing vegetation along the stream to provide a 40 foot wide access road for heavy equipment access. The contaminated area to be excavated by EPA entails an area of 14 x 3300 feet to a depth of 1 foot.

Additionally, upon removal of contaminated soil, the plan will address confirmatory sample collection and analysis of soils to a lead concentration of less than 500 ppm. Soils with Lead Concentrations over 500 ppm will be disposed of in a RCRA approved landfill. The Salem County Mosquito Control Commission will then deepen the creek to a depth of three feet.

C. **Scope of Work**

Previous analyses revealed that the creek bed was contaminated with concentrations of lead above the established removal action level of 500 ppm.

Grab samples will be collected along the creek from randomly chosen locations. A total of four samples and one duplicate will be collected from the soil surface. These samples will be collected at a depth not to exceed six inches.

2.0 DATA USE OBJECTIVES

The data will be utilized to establish the exposure limit to dust. The exposure limit will be calculated using the following formula:

$$EL_{max} = \frac{(EL\ mg/m^3)}{[Pb\ in\ mg/kg]\ (Safety\ Factor)}$$

EL_{max}:	Air concentration of total dust at which the contaminant would be at its established exposure limit.
EL :	Exposure limit of the contaminant of concern, in mg/m^3.
[Pb] :	Lead concentration in the soil.
Safety Factor:	A number between five (5) and ten (10) used to account for the degree of confidence.

3.0 QUALITY ASSURANCE OBJECTIVES

An EPA QA/QC level 2 is required for this project. QA/QC to be furnished by the contracted laboratory will (at a minimum) consist of the following measures to ensure accurate data:

1. Blind duplicates will be submitted for every 20 samples collected to determine analytical precision. Results will be documented and submitted in a written report.

2. Rinsate blanks consisting of organic-free water will not be collected because dedicated sampling equipment (plastic scoop) will be used to collect each sample and then discarded.

3. Matrix spike and matrix spike duplicate analysis will also be performed for every 20 samples.

4. The contracted laboratory will also furnish the following deliverables as warranted:

   a) GC/MS tuning and calibration standards;
   b) Copies of all spectral data obtained during performance of analysis. Copies should be signed by the analyst and checked by the Laboratory Manager;
   c) Data System Printout (quantitation report or legible facsimile (GC/MS));
   d) Manual worksheets;
   e) Identification and explanation of any analytical modifications used that differ from EPA protocol.

4.0 APPROACH AND SAMPLING METHODOLOGIES

4.1 Sampling Equipment

The following equipment will be utilized to obtain waste samples from the respective media/matrix:

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
Soil	plastic scoop	plastic	Yes

4.2 Sampling Locations

Sample locations will be designated under the direction of the EPA OSC. Five (5) samples will be obtained in the area along the banks of the West Creek on the site. Sample locations will be designated on-site, and will be selected in a manner to best provide a true and representative indication of relative lead concentrations in the area of concern. Locations designated will be fully documented in the site log book for future use, review, and/or duplication if required.

5.0 Standard Operating Procedures

5.1 Sample Documentation

All sample documents will be completed legibly, in ink. Any corrections or revisions will be made by lining once through the incorrect entry where the original entry can still be seen and initialling the error.

5.2 Field Logbook

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries, and should include (at a minimum) the following:

1. Site ID or code name and project number.
2. Name(s) of personnel on-site.
3. Dates and times of all entries (military time preferred).
4. Descriptions of all site activities, including site entry and exit times.
5. Noteworthy events and discussions.
6. Weather conditions.
7. Site observations.
8. Identification and description of samples and locations.
9. Subcontractor information and names of on-site personnel.
10. Date and time of sample collections, along with chain of custody information.
11. Record of photographs.
12. Site sketches.

5.3 Sample Labels

Sample labels will clearly identify the particular sample, and should include the following:

1. Site name and number.
2. Time and date sample was taken.
3. Sample preservation, if necessary.
4. Analysis requested.

Optional, but pertinent, information is the sample location. Sample labels will be securely affixed to the sample container. Tie-on labels can be used if properly secured.

5.4 Chain of Custody Record

Chain of Custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a locked container sealed with a Custody Seal.

The Chain of Custody record should include (at minimum) the following:

1. Sample identification number.
2. Sample information.
3. Sample location.
4. Sample date.
5. Name(s) and signature(s) of sampler(s).
6. Signature(s) of any individual(s) with control over samples.

5.5 Custody Seals

Custody Seals demonstrate that a sample container has not been tampered with, or opened. Individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook.

6.0 Sample Handling and Shipment

Each of the sample bottles will be sealed and labeled according to the following protocol. Caps will be secured with custody seals. Bottle labels will contain all required information including site name and sample number, time and date of collection, analysis requested, and preservative used. Sealed bottles will be placed in large metal or plastic coolers, and padded with an absorbent material such as vermiculite.

All sample documents will be affixed to the underside of each cooler lid. The lid will be sealed and affixed on at least two sides with custody seals so that any sign of tampering is easily visible. The samples will be hand delivered to the laboratory or sent by a commercial air shipment firm for overnight delivery.

7.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The EPA On-Scene Coordinator, Eugene Dominach, will provide overall direction to Roy F. Weston staff concerning project sampling needs, objectives and schedule.

The Roy F. Weston Task Leader, Ron Starks, is the primary point of contact with the EPA On-Scene Coordinator. The Task Leader is responsible for the development and completion of the Sampling QA/QC Plan, project team organization, and supervision of all project tasks, including reporting and deliverables.

The Roy F. Weston Site QC Coordinator, Victor Vicenty, is responsible for the accuracy of the Sampling QA/QC Plan and the evaluation of any deviations. The Site QC Coordinator is also the primary project team contact with the lab.

The following personnel have the following responsibilities for this project:

Personnel	Responsibility
Ron Starks	Project Manager & Sampling Supervisor
Victor Vicenty	Project Coordinator & Operations

8.0 DELIVERABLES

The Roy F. Weston Task Leader will maintain contact with the EPA On-Scene Coordinator to keep him informed about the technical and financial progress of this project. This communication will commence with the issuance of the work assignment and project scoping meeting. Activities under this project will be reported in status and trip reports and other deliverables (e.g., analytical and final reports) described herein.

Activities will also be summarized in appropriate format for inclusion in monthly and annual reports.

The following deliverables will be provided under this project:

8.1 Trip Report

A trip report will be prepared to provide a detailed accounting of what occurred during each sampling mobilization. The trip report will be prepared within 2 weeks of the last day of each sampling mobilization. Information will be provided on time of major events, dates, and personnel on-site (including affiliations and phone numbers). The trip report will be organized into three major sections: Background, Observations and Activities, and Conclusions/recommendations if appropriate.

8.2 Figures/Appendices

Figures and Appendices will be provided as appropriate.

8.3 Analysis

This sampling event requires analytical services. Documentation of lab selection, raw data, or results will be provided in the analytical report. Analytical services will provide under an analytical TDD, with validation preferred by Region II Technical Assistance Team.

8.4 Data Review

A review of the data generated under this plan will be undertaken. The assessment of data acceptability or useability will be provided separately, or as part of the analytical report.

8.5 Analytical Report

An analytical report will be prepared for samples analyzed under this plan. Information regarding the analytical methods or procedures employed, sample results, QA/QC results, chain of custody documentation, laboratory correspondence, and raw data will be provided within this deliverable.

8.6 Final Report

A final report will be prepared to correlate available background information with data generated under this sampling event and identify supportable conclusions and recommendations which satisfy the objectives of this sampling QA/QC plan.

9.0 DATA VALIDATION

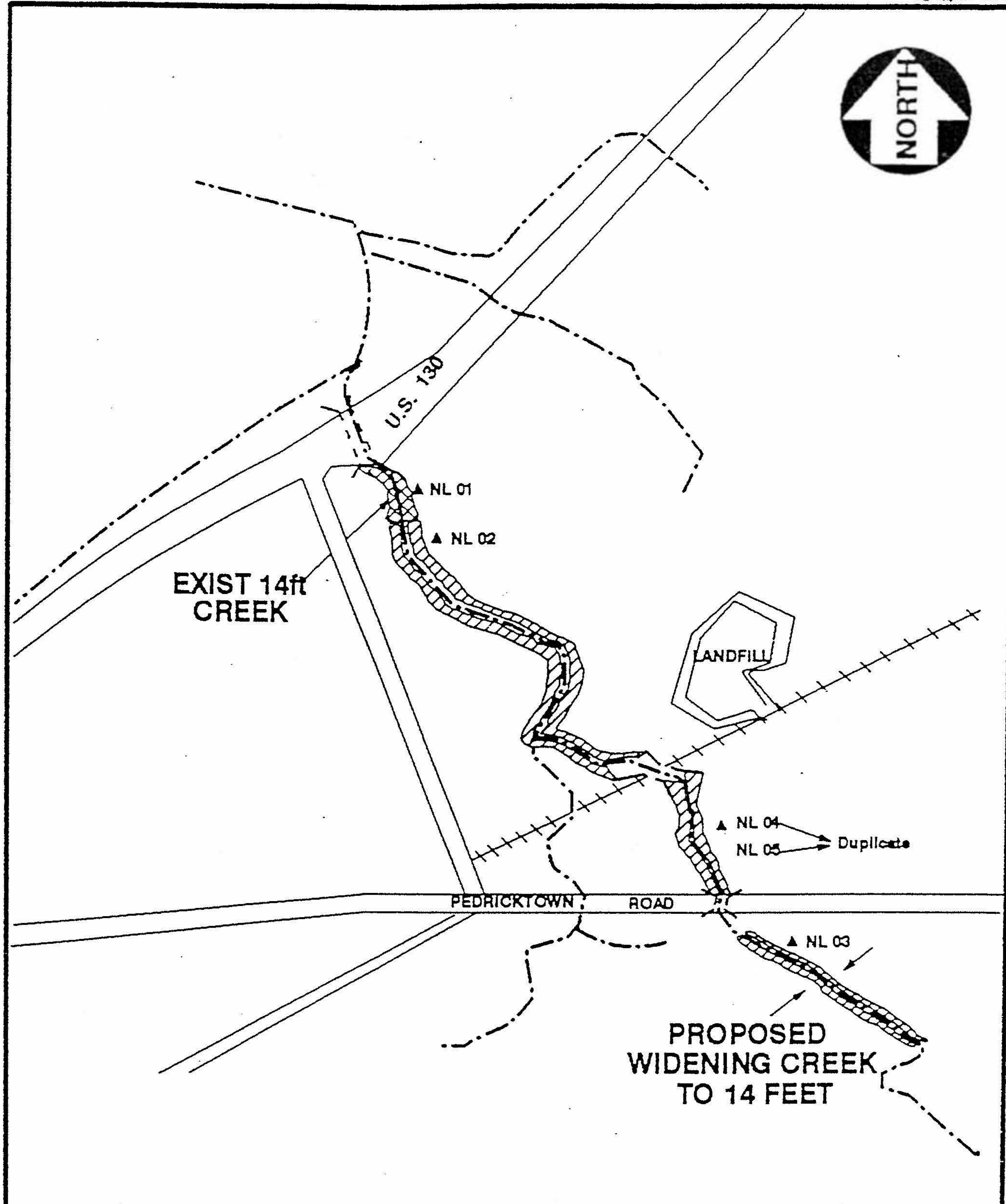
The data will be evaluated under QA2 guidelines.

Data generated under this QA/QC Sampling Plan will be evaluated accordingly with appropriate criteria contained in the Removal Program Data Validation Procedures which accompany OSWER Directive #9360.4-1.

The results of 10% of the samples in the analytical data packages should be evaluated for all of the elements listed in Section 6.0 of the QA/QC Sampling Plan. The holding times, blank contamination, and detection capability will be reviewed for all remaining samples.

100199

FIGURES



WESTON	Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM E.G. Dominach	West Creek NL INDUSTRIES
	IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R.E. SARRIERA ASSOCIATES	TAT PM R. Starks	Figure 1

ATTACHMENTS

CALCULATING PARTICULATE ACTION LEVELS

7.1 No Contaminant of Concern

For job-sites where there is no contaminant of concern, keep exposure to respirable nuisance dusts, below the OSHA PEL of 5 mg/m^3. This implies that work teams will don respirators when the concentration of respirable dust exceeds 2.5 mg/m^3. See Section 8.1.

7.2 One Contaminant of Concern

For job-sites with a single contaminant of concern (such as cadmium), the following formula can be used to establish an exposure limit.

$$EL_{mix} = \frac{(EL\ mg/m^3)}{(conc\ g/g)\ (Safety\ Factor)} = \frac{(10^6\ mg/Kg)\ (EL\ mg/m^3)}{(conc\ mg/Kg)\ (Safety\ Factor)}$$

Where:

EL_{mix}:	Air concentration of total dust at which the contaminants of concern would be at their established exposure limit.
EL:	Exposure limit of the contaminant of concern, e.g., its PEL, REL, or TLV, whichever is lower, in mg/m^3
10^6:	Conversion factor
conc:	Soil concentration of the contaminant of concern in mg/kg
Safety Factor:	A number between one and ten used to account for the degree of confidence.

The safety factor is dependent on whether:

- The concentration of the contaminant in the airborne dust is the same as its concentration in soil.
- The soil concentration data depicts a representative or worst case.
- The monitoring instrument used accurately reports the concentration of dust in air (a respirable dust monitor will under-report the concentration of total dust in air).

If your confidence that the data represent site conditions well, use a safety factor of 2. If you have no confidence, use 10. In the absence of other information, use 4.

Example:

Cadmium in soil at 2,000 ppm. TLV = 0.05 mg/m^3

$$\text{Exposure Limit, } EL_{mix} = \frac{(10^6\ mg/Kg)\ (.05\ mg/m^3)}{(2000\ mg/Kg)\ (4)} = 6.25\ mg/m^3$$

In the example, cadmium at 2,000 mg/Kg (ppm) results in a dust exposure limit of 6.25 mg/m^3. When the atmosphere contains 6.25 mg/m^3 of total dust, it contains no more than 0.05 mg/m^3 of cadmium, its TLV. Respiratory protection would be recommended at respirable dust levels of 2.5 mg/m^3, one half of the OSHA dust PEL. Cadmium would not present a health problem in this case.

7.3 Several Contaminants with a Collective Exposure Limit

For sites contaminated with chemicals that have a collective limit [e.g., polynuclear aromatic hydrocarbons (PNAs)], the sum of the total contaminants found in soils should be used to establish soil concentration. The equation below can be used to establish the exposure limit:

$$EL_{mix} = \frac{(EL(c)\ mg/m^3)}{(\Sigma conc\ mg/Kg)\ (Safety\ Factor)} = \frac{(10^6\ mg/Kg)\ (EL(c)\ mg/m^3)}{(\Sigma conc\ mg/Kg)\ (Safety\ Factor)}$$

Where:

EL(c): Collective exposure limit, e.g., the TLV or PEL, whichever is lower, for the group as a whole, in mg/m^3.

Σconc: Sum of the soil concentrations of the contaminants of concern in mg/Kg

All other terms are defined as in Section 7.2.

Example:

Total polycyclic aromatic hydrocarbon concentration in soil is 4,500 mg/Kg, EL(c) = 0.2 mg/m^3.

$$EL_{mix} = \frac{(10^6\ mg/Kg)\ (0.2\ mg/m^3)}{(4,500\ mg/Kg)\ (4)} = 11\ mg/m^3$$

Again, the nuisance dust TLV would apply before the exposure limit for PNAs was reached. Respiratory protection would be recommended at one half the dust limit or 2.5 mg/m^3. A full face respirator with a high efficiency and organic vapor filter would be appropriate for this exposure.

7.4 Several Contaminants with Individual Exposure Limits

The previous equation can be used for aerosols of dust containing more than one contaminant of concern by adding individual soil concentration/ TLV (conc/TLV) terms before dividing them into the 10^6 mg/Kg term.

$$EL_{mix} = \frac{(10^6\ mg/Kg)}{[\Sigma(conc_n/EL_n)]\ (Safety\ Factor)}$$

Where:

EL_n = Established exposure limit for each contaminant of concern in the soil.

The remaining terms are defined as in Sections 7.2 and 7.3.

The easiest way to apply the formula above is through use of a table like the example shown below.

Contaminant	OSHA PEL	ACGIH TLV	Soil Conc	$Conc_n/EL_n$
Arsenic	0.01*	0.20	1,500	150,000
Cadmium	0.20	0.05*	2,000	40,000
Chromium	0.50	0.05*	1,000	20,000
Nickel	1.00	1.00*	500	500
Lead	0.05*	0.15	2,500	50,000
Total				260,500

* This limit was used as EL_n

$$EL_{mix} = \frac{(10^6 \text{ mg/Kg})}{(260,500)\ (4)} = 0.96 \text{ mg/m}^3$$

An exposure limit of 1.0 mg/m³ would be established for this soil. Respiratory protection would be recommended for any activity producing dust, for windy conditions, or when dust is visible (Section 8.1).

100205

1 Introduction

Industrial hygienists at hazardous waste operations must have procedures for using exposure guidelines. Many regulatory agencies and professional organizations publish limit values for worker exposure to hazardous substances. The guidelines normally limit exposure by inhalation because the other routes of exposure; injection, ingestion, and dermal absorption, are controlled by personal hygiene and work practices.

This chapter discusses the use of PELs (Permissible Exposure Limits), RELs (Recommended Exposure Limits), and TLVs (Threshold Limit Values) exposure limits and the levels IDLH (Immediately Dangerous to Life and Health).

2 Action Levels

Exposure to a contaminant at any concentration is rarely beneficial. Field workers must make every reasonable effort to keep their exposure as low as reasonably achievable (ALARA). When exposure is unavoidable, teams can use engineering controls and personal protection to keep their exposure well below established limits.

Work teams must determine action levels at which additional personal protection is required. The site HSP should state action levels and exposure limits for each contaminant. The action levels are reviewed and approved by the safety manager as part of the HSP. For many contaminants, an appropriate action level is one half its PEL, REL, or TLV, whichever is lowest. Exposures above one third of the IDLH require level B. When the identities of the vapors or gases are unknown, the HSM may approve the use of action levels based on total atmospheric concentrations (Section 5) until the airborne contaminants can be identified.

3 Sources of Exposure Limit Values

3.1 Occupational Safety and Health Administration (OSHA)

The Occupational Safety and Health Administration (OSHA) publishes a list of Permissible Exposure Limits (PELs) in its standard 29 CFR 1910.1000 et seq. Federal law requires employers to observe the OSHA PELs. Therefore, the exposure limit for a chemical will never exceed its PEL.

3.2 National Institute for Occupational Safety and Health (NIOSH)

The National Institute for Occupational Safety and Health (NIOSH) is a research agency. Any exposure limit that NIOSH recommends, and OSHA does not adopt is a Recommended Exposure Limit (REL). When a REL exists, but a PEL does not, the REL will apply. RELs are listed in the NIOSH Pocket Guide to Chemical Hazards, DHHS Publication #90-117.

NIOSH has also established the levels Immediately Dangerous to Life and Health (IDLH). Exposure to a chemical at the IDLH can cause irreversible health effects or escape impairing symptoms (e.g. severe respiratory irritation) within 30 minutes. The IDLH values can also be found in the NIOSH Pocket Guide to Chemical Hazards. Workers may enter areas where an IDLH condition may exist only in levels A or B.

3.3 American Conference of Governmental Industrial Hygienists (ACGIH)

The American Conference of Governmental Industrial Hygienists (ACGIH) publishes a list of Threshold Limit Values (TLVs). The TLVs appear annually in the booklet Threshold Limit Values and Biological Exposure Indices which is available from ACGIH, 6500 Glenway Avenue, Cincinnati, OH, 45211. The TLVs are widely accepted and applied, both in industry and in hazardous waste work. If the TLV for a contaminant is lower than the PEL, use the TLV.

4 Exposure Limit Notations

4.1 Duration of Limits

Limits published by all three sources are designed to be compared to a specific duration of sampling or monitoring. When the most important health effect can occur during the work day, a ceiling limit applies. The ceiling value should not be exceeded even instantaneously. Limits preceded by a "C" in the source tables are ceiling values.

When the most important health effect occurs days or years after exposure, a time weighted average (TWA) limit applies. TWAs are compared to the air concentration averaged over a workday. Workers can be exposed to brief periods over the time weighted average, provided they are compensated by periods of exposure below the limit. Short term exposure limits (STELs) supplement many time weighted average limits. They protect against acute effects (e.g. irritation, narcosis, and tissue damage) from substances that causes chronic toxic effects at lower levels. Most of the limits in the source tables are TWA limits. Some are STEL limits.

Excursions between the TWA and the STEL should be no longer than 15 minutes in duration, at least 60 minutes apart, and should not be repeated more than four times per day. Because the excursions are calculated into the eight-hour, time-weighted average, exposure during the rest of the day must be lower to compensate.

4.2 "Skin" Notation

Some PEL or TLV listings are followed by an "S" notation. This notation indicates that absorption through skin, mucous membranes, or the eyes can contribute significantly to the systemic exposure. Employees should use increased skin protection when dealing with these materials.

4.3 Exposure to Mixtures

While there is a wealth of information on inhalation exposure to a single chemical, there is little information on the combined effect of two or more chemicals. Exposures to a combination of chemicals that have unrelated effects (e.g. narcosis and irritation) are evaluated independently. Chemicals that have related effects (e.g. cancer and liver disease), are evaluated by adding the exposure levels as a fraction of their TLVs (% allowed = $\Sigma C_n/TLV_n$).

Hazardous waste work exposes workers to low levels of multiple chemicals which may have synergistic effects. All exposures must be kept as low as reasonably achievable (ALARA).

4.4 Extended Schedules

Hazardous waste personnel often work 10 or 12 hour days on waste sites. Most exposure limits assume eight-hour work shifts. For longer shifts, the TWA should be multiplied by eight and divided by the number of hours in the work day. For a ten hour work day, the 8-hour exposure limit would be reduced by 20 percent [1-(8/10)].

5 Action Levels Based on Total Vapor or Gas Concentration

Field work sometimes occurs on sites where the air contaminants are not fully characterized. Work teams can implement USEPA's system for selecting level of protection based on the total vapor or gas concentration in these situations.

"Total atmospheric vapor or gas concentration" means the read-out, in ppm, of a direct reading instrument such as an OVA or an HNu. These meters do not indicate the actual concentration of total vapor or gas present, only an instrumental response proportional to it. Accurate concentration readings can be obtained only by calibrating the instrument to the single substance being measured. The instrument sensitivity (span) of the meters is set upon calibration as directed by the manufacturers.

5.1 Factors For Consideration

The industrial hygienist should consider the following factors before selecting a level of protection based on the total vapor or gas reading.

- The operation and limitations of the monitoring instruments must be recognized and understood. The instruments do not respond to all substances or respond identically to the same substance.
- Some gases are not detected by these meters (e.g. phosgene, arsine, cyanides, chlorine).
- Explosives, flammable materials, oxygen deficiency, liquid/solid particles, or liquid or solid chemicals are not detected.
- Airborne contaminants must be identified as rapidly as possible so that action levels based on specific exposure limits can be used.

- o Vapors or gases with a very low TLV or IDLH could be present. This procedure may not indicate unsafe conditions.
- o The IH must conscientiously balance the risk against the value of the information to be obtained.
- o Any potential for suspect carcinogens or substances that are toxic or highly corrosive to skin to be present requires an evaluation of all of these factors.
- o The exposure potential of the task must be evaluated. Level C protection may be adequate for inspecting a site on which active tasks would require a higher level of protection.

If these conditions are present, total vapor or gas readings can yield a false sense of security. The company should limit the number of persons who may approve the use of total vapor or gas concentration to select level of protection.

5.2 Level C Protection (Up to 5 ppm above background)

When the air contaminants have not been completely characterized, and in the absence of odors or other indications of the presence of chemical contaminants, level C protection (coveralls and an air-purifying respirator) can be selected for total vapor or gas readings up to 5 ppm above background as measured in the breathing zone on (e.g.) the HNu PI-101 PID (11.7 eV) or Foxboro OVA FID.

There are many restrictions on use of level C. If any of those conditions apply, use of level C is prohibited. Unanticipated transient excursions may unexpectedly increase the concentrations in the environment above the limits of air-purifying devices. Potential releases from the work in progress may require level B protection, even though current levels are low.

5.3 Level B Protection (5 ppm to 500 ppm above background)

When the air contaminants have not been completely characterized, and in the absence of odors or other indications of the presence of chemical contaminants, level B protection can be selected for readings between 5 and 500 ppm above background as measured in the breathing zone on (e.g.) the HNu PI-101 PID (11.7 eV) or Foxboro OVA FID.

Consider upgrading from Level B to Level A at 500 ppm. Because organic compounds are unlikely to condense on the skin at concentrations below 500 ppm, this level tends to protect the skin until the constituents can be identified and measured. Although Level B protection is adequate for many substances at levels higher than 500 ppm, use this limit as a decision point for careful evaluation of the risks associated with higher concentrations. Consider the factors listed in Section 5.1.

5.4 Level A Protection (500 ppm to 1000 ppm above background)

When the air contaminants have not been completely characterized, and in the absence of odors or other indications of the presence of chemical contaminants, level A protection can be selected for readings greater than 500 ppm and less than 1,000 ppm as measured in the breathing zone on the HNu PI-101 PID (11.7 eV) or Foxboro OVA FID.

Although Level A provides protection against toxic affects at levels greater than 1,000 ppm for most substances, an operational restriction of 1,000 ppm provides a warning flag to:

- o Evaluate the need to enter environments with unknown concentrations greater than 1,000 ppm.
- o Identify the specific constituents contributing to the total concentration and their associated toxic properties.
- o Evaluate the calibration and/or sensitivity error associated with the instrument(s).
- o Evaluate instrument sensitivity to wind velocity, humidity temperature, etc.
- o Consider the possibility that an explosion hazard may also be present, particularly in confined spaces.

Ambient air concentrations approaching 500 ppm are rarely encountered on hazardous waste projects. High concentrations have been encountered in confined spaces, when containers were being opened, when personnel were working in the spilled contaminants, or when organic vapors/gases were released in transportation accidents. A decision to require Level A protection should also consider the negative aspects: higher probability of accidents due to cumbersome equipment, and most importantly, the physical stress caused by heat build-up in fully encapsulating suits. CHSO approval is required for level A work.

6 Action Levels for Other Effects

Unless the client for which you're working has more restrictive policies, limit your field work as described below.

6.1 Flammability

Whenever the work space air may possibly contain gases or vapors at explosive concentrations, teams monitor for combustible gas. The action levels for combustible gases or flammable vapors are listed below:

Concentration	Action Taken
<10% of LEL	Work may continue. Consider toxicity potential.
10 to 25% of LEL	Work may continue. Increase monitoring frequency.
>25% of LEL	Work must stop. Ventilate area before returning.

6.2 Oxygen Deficiency

Whenever the work space air may possibly contain more oxygen, or less oxygen, than normal air, teams monitor for oxygen. The action levels for oxygen concentration are listed below:

Concentration	Action Taken
<19.5% 02	Leave area. Re-enter only with SCBAs.
19.5 to 25% 02	Work may continue. Investigate changes from 21%
>25% 02	Work must stop. Ventilate area before returning.

6.3 Radiation

Whenever elevated levels of radiation may possibly be present in the the work space, teams monitor for radiation. The action levels for radiation are summarized below:

Intensity	Action Taken
<3 X background	Work may continue
>60 μrem/hour	Radiation work zone. Notify Health & Safety.
>250 μrem/hour	Work proceeds only with health and safety approval.
>2,000 μrem/hour	Establish exclusion zone. Get health physicist's advice.
>100,000 μrem/hour	Work must stop.

6.4 Noise

Whenever team members must raise their voices to communicate at a distance of three feet or less, they will monitor the work area for noise levels. When action levels for noise are listed below:

Intensity	Action Taken
<85 dBA	Work may continue without change.
85 to 90 dBA	Provide hearing protectors to team.
>90 dBA	Team must wear protectors. Use feasible controls.

7 Establishing Exposure Limits for Mixtures of Soil and Contaminants

The presence of contaminants in soil or water does not always imply an inhalation hazard. Substances with low vapor pressures usually disperse only in the form of mists or dusts. For example, PCBs, which have very low vapor pressures, may pose an inhalation hazard by piggy-backing on airborne dust. If you apply water to the soil to keep the dust down, the PCB inhalation hazard would be significantly reduced.

Working in locations where solid or liquid contaminants are present in soil requires special planning. Work teams may compare the concentration of total or respirable dust in the air to the established exposure limit by the method below. This method applies only to contaminants (for example, metals, salts, and non-volatile organics) which travel through air with the soil particles.

In the example, cadmium at 2,000 mg/Kg (ppm) results in a dust exposure limit of 6.25 mg/m³. When the atmosphere contains 6.25 mg/m³ of total dust, it contains no more than 0.05 mg/m³ of cadmium, its TLV. Respiratory protection would be recommended at respirable dust levels of 2.5 mg/m³, one half of the OSHA dust PEL. Cadmium would not present a health problem in this case.

7.3 Several Contaminants with a Collective Exposure Limit

For sites contaminated with chemicals that have a collective limit [e.g., polynuclear aromatic hydrocarbons (PNAs)], the sum of the total contaminants found in soils should be used to establish soil concentration. The equation below can be used to establish the exposure limit:

$$EL_{mix} = \frac{(EL(c)\ mg/m^3)}{(\Sigma conc\ mg/Kg)\ (Safety\ Factor)} = \frac{(10^6\ mg/Kg)\ (EL(c)\ mg/m^3)}{(\Sigma conc\ mg/Kg)\ (Safety\ Factor)}$$

Where:

EL(c): Collective exposure limit, e.g., the TLV or PEL, whichever is lower, for the group as a whole, in mg/m³.

Σconc: Sum of the soil concentrations of the contaminants of concern in mg/Kg

All other terms are defined as in Section 7.2.

Example:

Total polycyclic aromatic hydrocarbon concentration in soil is 4,500 mg/Kg, EL(c) = 0.2 mg/m³.

$$EL_{mix} = \frac{(10^6\ mg/Kg)\ (0.2\ mg/m^3)}{(4{,}500\ mg/Kg)\ (4)} = 11\ mg/m^3$$

Again, the nuisance dust TLV would apply before the exposure limit for PNAs was reached. Respiratory protection would be recommended at one half the dust limit or 2.5 mg/m³. A full face respirator with a high efficiency and organic vapor filter would be appropriate for this exposure.

7.4 Several Contaminants with Individual Exposure Limits

The previous equation can be used for aerosols of dust containing more than one contaminant of concern by adding individual soil concentration/ TLV (conc/TLV) terms before dividing them into the 10^6 mg/Kg term.

$$EL_{mix} = \frac{(10^6\ mg/Kg)}{[\Sigma(conc_n/EL_n)]\ (Safety\ Factor)}$$

Where:

EL_n = Established exposure limit for each contaminant of concern in the soil.

The remaining terms are defined as in Sections 7.2 and 7.3.

The easiest way to apply the formula above is through use of a table like the example shown below.

Contaminant	OSHA PEL	ACGIH TLV	Soil Conc	$Conc_n/EL_n$
Arsenic	0.01*	0.20	1,500	150,000
Cadmium	0.20	0.05*	2,000	40,000
Chromium	0.50	0.05*	1,000	20,000
Nickel	1.00	1.00*	500	500
Lead	0.05*	0.15	2,500	50,000
Total				260,500

* This limit was used as EL_n

$$EL_{mix} = \frac{(10^6 \text{ mg/Kg})}{(260{,}500)\ (4)} = 0.96 \text{ mg/m}^3$$

An exposure limit of 1.0 mg/m³ would be established for this soil. Respiratory protection would be recommended for any activity producing dust, for windy conditions, or when dust is visible (Section 8.1).

7.5 Simultaneous Exposure to Aerosols and Vapors or Asbestos

When the contaminants of concern at a site include those for which this method applies (metals, salts, etc.) and those for which it does not (gases, vapors, asbestos, etc.), exposure must be separately assessed by the methods appropriate for each contaminant. In some circumstances, it may be appropriate to add the exposures from the different classes of material. See Section 4.3.

8 Determining or Estimating Exposure Conditions

8.1 Determining Particulate Concentrations

If particulate exposure is a concern, monitor airborne concentrations with a respirable dust monitor like the MIE Miniram or collect filter samples for laboratory analysis with an air sampling pump. Sample with an air pump during initial stages of all site tasks when the crew will remain on site for a longer time than would be consumed by laboratory analysis, e.g., for field operations lasting more than a week. Respirable dust particles are generally not visible to the naked eye, but total airborne dust concentrations are often quite visible at concentrations of 2 mg/m³.

If you calculate an exposure limit of 1 mg/m³ or less for a dust, wear respiratory protection at all times unless air monitoring results demonstrate an exposure below acceptable limits. For any soil or dust with an exposure limit of 2 mg/m³ or more, respiratory protection is generally not necessary unless airborne dusts are produced through mechanical means or wind generated, or airborne dusts become visible in the breathing zone.

8.2 Determining Gas and Vapor Concentrations

Gas and vapor concentrations can be determined on site by the measurement. The levels can be estimated prior to site work by the following procedures.

Volatile compounds are usually present in air (in ppm by volume) below their concentrations (in ppm by weight) in the soil or water from which they originate.

The potential for exposure to airborne contaminants can be estimated by comparing the soil or water concentration and vapor pressure to the exposure limit. Contaminants that have high vapor pressures are more likely to be present in the atmosphere as vapors. The concentration of a vapor in a work space can never exceed its concentration at saturation at its source. If the published saturation vapor pressure (P^V, in mm Hg) times 1316 ppm/mm Hg is lower than the established exposure limit, then its vapor can never be present above that limit.

If a contaminant vapor arises from ground water, and you know its concentration, you can estimate its maximum possible concentration in the air by using Raoult's Law ($P^* = P^V * X$) to find the saturation vapor pressure (P^*) over the mixture at concentration = X, and you multiply that vapor pressure by 1316 ppm/mm Hg to find the maximum possible concentration.

Example

You are developing a health and safety plan for a site where methyl cellosolve is present in ground water at 100 ppm. You can convert the published saturation vapor pressure (6 mm Hg) to ppm as follows:

$$P^V = 6 \text{ mm Hg} = 7{,}895 \text{ ppm}$$

You can calculate the vapor pressure over a 100 ppm (10^{-4}) solution as follows:

$$X_i \text{ (mole fraction at 100 ppm)} = 1{,}000 * 10^{-4} / 76.1 / 55.55 = 2.36\ E^{-5}$$

$$P^* = 7{,}895 * 2.36\ E^{-5} = 0.19 \text{ ppm}$$

Raoult's Law provides less accurate results than Henry's Law, but Henry's Law constants are more difficult to find. Please, remember that this method only yields usable results when the contaminant is <u>dissolved</u> in water. The saturation vapor pressure over a liquid floating on the water's surface is the same as the vapor pressure over the pure liquid.

TAT-02-F-06141

SLAG PILE TCLP SAMPLING PLAN
NL INDUSTRIES
PEDRICKTON, SALEM, NEW JERSEY

December 1990

Prepared by:

Michael Mentzel
Region II Technical Assistance Team
Weston/SPER Division
Edison, New Jersey 08837

Prepared for:

Eugene Dominach
Removal Action Branch
U.S. EPA Region II
Edison, New Jersey 08837

SLAG PILE SAMPLING PLAN
NL INDUSTRIES

1. PROJECT NAME: NL Industries
   Pedrickton
   Salem County, NJ

2. PROJECT REQUESTED BY: Eugene Dominach
   Removal Action Branch

3. DATE REQUESTED: November 19, 1990

4. DATE OF PROJECT INITIATION: December, 1990

5. PROJECT OFFICERS: Michael Mentzel, TAT II
   Rohan Tadas, TAT II

6. QUALITY ASSURANCE OFFICER: Michael Edwards, TAT II

7. PROJECT DESCRIPTION:

   A. Objective and Scope

   The objective of this project is to provide data pertaining to the nature and relative quantity of leachable contaminants found in the slag piles on-site.

   The scope of the project entails collecting slag samples from 36 discrete points. The following groups of samples will be taken:

Location	Quantity
Slag Pile A	10
Slag Pile B	8
Slag Pile C	8
Slag Pile D	8
Blind Duplicate	2

   Refer to Figure 1 for a description of sample locations.

   B. Data Usage:

   The samples will provide information as to the extent of contamination located in the slag piles on-site. This information will be used to determine the best method of treatment and/or disposal. In addition, information obtained will be used to form removal action estimate and cost analysis for complete remediation at the site.

Slag Pile TOTAL: 34 (+2)

METHOD:	Coring
COMPOSITE:	4 points per sample @ 2.5 feet
TOTAL #:	34
DUPES-MS/MSD:	2 dupe + 2 MS/MSD
SAMPLE #s:	CLP-001T to CLP-036T

11. SAMPLE CUSTODY PROCEDURES:

Each sample must be accurately and completely identified. It is important that any label be moisture resistant and able to withstand field conditions. Sample containers will be labeled prior to sample collection. The information on each label should include the following, but is not limited to:

i. Date of collection
ii. Site name
iii. Sample identity/location
iv. Analysis requested

EPA Chain-of-Custody will be filled out and maintained throughout the entire site activities as per TAT SOP on sample handling, Sampling Container Contract specifications, and EPA Laboratories SOP. The Chain-of-Custody form to be used lists the following information:

i. Project name;
ii. Sample number;
iii. Number of sample containers;
iv. Description of samples including specific location of sample collection;
v. Identity of person collecting the sample;
vi. Date and time of sample collection;
vii. Date and time of custody transfer to laboratory (if the sample was collected by a person other than laboratory personnel);
viii. Identity of person accepting custody (if the sample was collected by a person other than laboratory personnel);
ix. Identity of the lab performing the analyses.

12. DOCUMENTATION, DATA REDUCTION AND REPORTING:

Field data will be entered into a bound notebook. Field notebooks, field data sheets, Chain-of-Custody forms, and laboratory analyses reports will be filed and stored per the TAT Document Control System.

15. SYSTEM AUDIT:

The Quality Control Officer will observe the sampling operations and subsequent analytical data to assure that the QA/QC project plan has been followed.

16. CORRECTIVE ACTION:

All provisions will be taken in the field and laboratory to ensure that any problems that may develop will be dealt with as quickly as possible. This will be done to ensure the continuity of the sampling program. Any deviations from this sampling plan will be noted in the final report.

17. REPORTS:

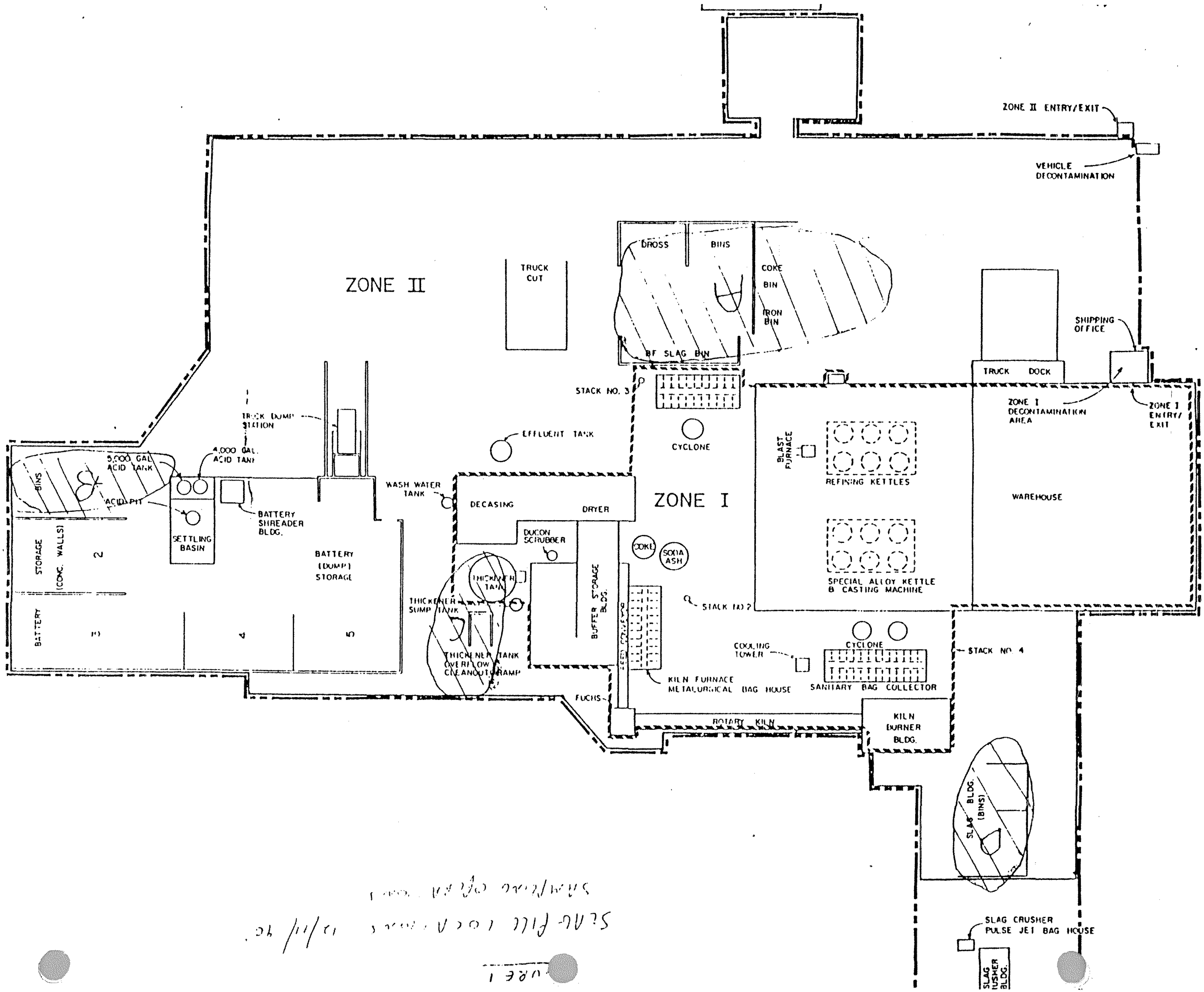
Laboratory results and all requested QA/QC information will be submitted to EPA upon completion of sample analyses. Sampling reports will be issued after receipt of laboratory results.

DATA SHEET

NL Industries Sampling
December 1990

TAT	SAMPLE	CLP #	TAG #	LOCATION

100219



SLAG FILL LOCATIONS 12/11/90

Sampling ...

...URE 1

100220

TAT-02-F-05567

AIR SAMPLING PLAN
NL INDUSTRIES
PEDRICKTON, SALEM, NEW JERSEY

November 1989

Prepared by:

Michael Mentzel
Region II Technical Assistance Team
Weston/SPER Division
Edison, New Jersey 08837

Prepared for:

Eugene Dominach
Removal Action Branch
U.S. EPA Region II
Edison, New Jersey 08837

100221

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AIR SAMPLING PLAN
NL INDUSTRIES

1. PROJECT NAME: NL Industries
Pedrickton
Salem County, NJ

2. PROJECT REQUESTED BY: Eugene Dominach
Removal Action Branch

3. DATE REQUESTED: November 9, 1989

4. DATE OF PROJECT INITIATION: November 14, 1989

5. PROJECT OFFICERS: Michael Mentzel, TAT II
Carl Kelley, TAT II

6. QUALITY ASSURANCE OFFICER: Anibal Diaz, TAT II

7. PROJECT DESCRIPTION:

A. Objective and Scope

The objective of this project is to provide data pertaining to the nature and relative quantity of possible airborne lead contamination at the NL site.

The scope of the project entails collecting air samples from several discrete points. The following groups of samples will be taken:

1 - Command Post
3 - Outdoor
1 - Indoor
2 - Blank

B. Data Usage:

The air samples will provide information as to the extent of possible contamination located on the site and inside the building.

C. Parameter Table:

Air Samples:

PARAMETER	# OF SAMPLES	SAMPLE MATRIX	ANALYTICAL MTD. REF.	SAMPLE PRESERVATION	HOLDING TIME	VOLUME
Lead	5	Air	NIOSH 7082 Attachment B	N/A	Stable	1080 Liters On Cassette Filter

8. PROJECT FISCAL INFORMATION:

Sampling equipment and manpower shall be provided by the Technical

Assistance Team (TAT) in coordination with the U.S. EPA. All man-hours expended by TAT will be charged to TDD.

9. PROJECT ORGANIZATION AND RESPONSIBILITY:

The following is a list of key project personnel and their corresponding responsibilities:

Eugene Dominach USEPA	Project Director
Michael Mentzel, TAT II	Overall Project Coordination Sampling QC
Carl Kelley, TAT II	Sampling Operations
Anibal Diaz, TAT II	Laboratory Coordination & QC

10. SAMPLING PROCEDURES:

A. Air Sampling:

Air sampling for lead will be conducted in accordance with NIOSH Method 7082. Due to the low concentrations of contaminants suspected, a volume of 1080 liters will be collected for analysis of lead in the samples. All important data pertaining to the air samples will be recorded on the data sheet included as Attachment 1.

Location of all sample points will also be placed on a copy of the site diagram.

11. SAMPLE CUSTODY PROCEDURES:

Each sample must be accurately and completely identified. It is important that any label be moisture resistant and able to withstand field conditions. Sample containers will be labeled prior to sample collection. The information on each label should include the following, but is not limited to:

i. Date of collection
ii. Site name
iii. Sample identity/location
iv. Analysis requested

EPA Chain-of-Custody will be filled out and maintained throughout the entire site activities as per TAT SOP on sample handling, Sampling Container Contract specifications, and EPA Laboratories SOP. The Chain-of-Custody form to be used lists the following information:

i. Project name;
ii. Sample number;

iii. Number of sample containers;
iv. Description of samples including specific location of sample collection;
v. Identity of person collecting the sample;
vi. Date and time of sample collection;
vii. Date and time of custody transfer to laboratory (if the sample was collected by a person other than laboratory personnel);
viii. Identity of person accepting custody (if the sample was collected by a person other than laboratory personnel);
ix. Identity of the lab performing the analyses.

12. DOCUMENTATION, DATA REDUCTION AND REPORTING:

Field data will be entered into a bound notebook. Field notebooks, field data sheets, Chain-of-Custody forms, and laboratory analyses reports will be filed and stored per the TAT Document Control System.

13. QUALITY ASSURANCE AND DATA REPORTING:

QA/QC to be furnished by the contracted laboratory in performance of the analysis will (at a minimum) consist of the following measures to ensure accurate data:

1. Two field blanks for each type of equipment per day will be shipped to the laboratory. These blanks, are to be prepared prior to the sampling events on each day and analyzed in order to ensure that no contamination has occurred during sampling.

2. The contracted laboratory will also furnish the following deliverables as warranted:

    a) Calibration standard.

    b) Copies of all spectral data obtained during performance of analysis. Copies should be signed by the analyst and checked by the Laboratory Manager.

    c) Data System Printout.

    d) Manual work sheets.

    e) Identification and explanation of any analytical modifications used that differ from USEPA protocol.

    All results are to be completed and a written report submitted by the lab to the TAT QC officer within two (2) weeks of the Validated Time of Sample Receipt (VTSR).

14. DATE VALIDATION:

All steps of data generation and handling will be evaluated by the Project Officer and the Quality Assurance Officer for compliance with the specified requirements. ESD-MMB will perform data validation using current protocol.

15. SYSTEM AUDIT:

The Quality Control Officer will observe the sampling operations and subsequent analytical data to assure that the QA/QC project plan has been followed.

16. CORRECTIVE ACTION:

All provisions will be taken in the field and laboratory to ensure that any problems that may develop will be dealt with as quickly as possible. This will be done to ensure the continuity of the sampling program. Any deviations from this sampling plan will be noted in the final report.

17. REPORTS:

Laboratory results and all requested QA/QC information will be submitted to EPA upon completion of sample analyses. Sampling reports will be issued after receipt of laboratory results.

100226

ADDITIONAL DOCUMENTATION RELATING TO THIS SECTION CAN BE FOUND IN THE FOLLOWING SECTION:

SECTION: 2.3.1 Site File

DOCUMENT DATE: November 1989

DOCUMENT TITLE: Air Sampling Plan NL Industries Pedrickton, Salem, New Jersey

TAT-02-F-05589

WATER SAMPLING PLAN
NL INDUSTRIES
PEDRICKTON, SALEM, NEW JERSEY

November 1989

Prepared by:

Michael Mentzel
Region II Technical Assistance Team
Weston/SPER Division
Edison, New Jersey 08837

Prepared for:

Eugene Dominach
Removal Action Branch
U.S. EPA Region II
Edison, New Jersey 08837

TABLE OF CONTENTS

WATER SAMPLING PLAN
NL INDUSTRIES

1. PROJECT NAME: NL Industries
   Pedrickton
   Salem County, NJ

2. PROJECT REQUESTED BY: Eugene Dominach
   Removal Action Branch

3. DATE REQUESTED: November 16, 1989

4. DATE OF PROJECT INITIATION: November 17, 1989

5. PROJECT OFFICERS: Michael Mentzel, TAT II
   Carl Kelley, TAT II

6. QUALITY ASSURANCE OFFICER: Anibal Diaz, TAT II

7. PROJECT DESCRIPTION:

A. Objective and Scope

The objective of this project is to provide data pertaining to the nature and relative quantity of metals contamination found in pools of standing water on-site.

The scope of the project entails collecting water samples from seven discrete points. The following groups of samples will be taken:

Standing Water Pool	SW-1
" " "	SW-2
" " "	SW-3
" " "	SW-4
Basement Water	BW-5
" "	BW-6
Sump Water	SU-7

Refer to Figure 1 for a GLA/HC depiction of sample locations.

B. Data Usage:

The water samples will provide information as to the extent of possible contamination located in the standing water on-site. This information will be used to determine the best method of treatment to remove the contamination. In addition, information obtained will be used to form removal action estimate and cost analysis for complete remediation at the site.

C. Parameter Table:

Air Samples:

PARAMETER	# OF SAMPLES	SAMPLE MATRIX	ANALYTICAL MTD. REF.	SAMPLE PRESERVATION	HOLDING TIME	VOLUME
Total Metals	7	Aqueous	200 MCAWW	Cool to 4°C HNO_3 to ph<2	6 Month	1 L Poly

8. PROJECT FISCAL INFORMATION:

Sampling equipment and manpower shall be provided by the Technical Assistance Team (TAT) in coordination with the U.S. EPA. All man-hours expended by TAT will be charged to TDD 02-8911-05.

9. PROJECT ORGANIZATION AND RESPONSIBILITY:

The following is a list of key project personnel and their corresponding responsibilities:

Eugene Dominach USEPA	Project Director
Michael Mentzel, TAT II	Overall Project Coordination Sampling QC
Carl Kelley, TAT II	Sampling Operations
Anibal Diaz, TAT II	Laboratory Coordination & QC

10. SAMPLING PROCEDURES:

A. Air Sampling:

Grab samples will be collected from seven locations on-site. Each sample will consist of a composite taken from several discreet points in each location. A subsurface grab sampler similar to the one shown in Figure 2 will be utilized to obtain material from the top, bottom and middle of the puddle. A long extension will be used to reach the center of the puddle or sump.

All information will be recorded on a field data sheet included as Figure 3.

11. SAMPLE CUSTODY PROCEDURES:

Each sample must be accurately and completely identified. It is important that any label be moisture resistant and able to withstand field conditions. Sample containers will be labeled prior to sample collection. The information on each label should include the following, but is not limited to:

i. Date of collection
ii. Site name
iii. Sample identity/location
iv. Analysis requested

EPA Chain-of-Custody will be filled out and maintained throughout the entire site activities as per TAT SOP on sample handling, Sampling Container Contract specifications, and EPA Laboratories SOP. The Chain-of-Custody form to be used lists the following information:

i. Project name;
ii. Sample number;
iii. Number of sample containers;
iv. Description of samples including specific location of sample collection;
v. Identity of person collecting the sample;
vi. Date and time of sample collection;
vii. Date and time of custody transfer to laboratory (if the sample was collected by a person other than laboratory personnel);
viii. Identity of person accepting custody (if the sample was collected by a person other than laboratory personnel);
ix. Identity of the lab performing the analyses.

12. <u>DOCUMENTATION, DATA REDUCTION AND REPORTING</u>:

Field data will be entered into a bound notebook. Field notebooks, field data sheets, Chain-of-Custody forms, and laboratory analyses reports will be filed and stored per the TAT Document Control System.

13. <u>QUALITY ASSURANCE AND DATA REPORTING</u>:

QA/QC to be furnished by the contracted laboratory in performance of the analysis will (at a minimum) consist of the following measures to ensure accurate data:

1. One field blanks for each type of equipment per day will be shipped to the laboratory. These blanks, are to be prepared prior to the sampling events on each day and analyzed in order to ensure that no contamination has occurred during sampling.

2. A blind duplicate will be submitted for every 20 samples to check the analytical precision.

3. Matrix spike and matrix spike duplicate analysis will also be performed on one sample for every 20. Triple volume will be collected.

4. The contracted laboratory will also furnish the following deliverables as warranted:

   a) Calibration standard

   b) Copies of all spectral data obtained during performance of analysis. Copies should be signed by the analyst and checked by the Laboratory Manager.

   c) Data System Printout.

   d) Manual work sheets.

   e) Identification and explanation of any analytical modifications used that differ from USEPA protocol.

   All results are to be completed and a written report submitted by the lab to the TAT QC officer within two (2) weeks of the Validated Time of Sample Receipt (VTSR).

14. <u>DATE VALIDATION</u>:

All steps of data generation and handling will be evaluated by the Project Officer and the Quality Assurance Officer for compliance with the specified requirements. ESD-MMB will perform data validation using current protocol.

15. <u>SYSTEM AUDIT</u>:

The Quality Control Officer will observe the sampling operations and subsequent analytical data to assure that the QA/QC project plan has been followed.

16. <u>CORRECTIVE ACTION</u>:

All provisions will be taken in the field and laboratory to ensure that any problems that may develop will be dealt with as quickly as possible. This will be done to ensure the continuity of the sampling program. Any deviations from this sampling plan will be noted in the final report.

17. <u>REPORTS</u>:

Laboratory results and all requested QA/QC information will be submitted to EPA upon completion of sample analyses. Sampling reports will be issued after receipt of laboratory results.

100233

NL INDUSTRIES
SAMPLING PLAN

EPA Site No.: E0061
TAT Work Order No: 2296
EPA Contract No: 68-01-7367

APPROVALS

Roy F. Weston, Inc.

Carl Kelley	8/24/89	Anibal Diaz	8/23/89
Carl Kelley Task Leader	Date	Anibal Diaz Quality Assurance Officer	Date

1.0 BACKGROUND

The NL Industries site is an abandoned secondary lead smelting facility situated on 46 acres of land, approximately 1.5 miles from the Delaware River in Pedricktown, Salem County, New Jersey. (See attached map, Figure 1.) The defunct plant is located in an industrial park in a rural area; the site is separated by railroad tracks which are owned by Conrail. (See Figure 2.)

The following information is known about the site:

The site overlies the Cape May aquifer. Oldmans Creek, a tributary of the Delaware River used for recreational purposes, borders the area to the north and east along with Gloucester County. The Delaware River borders the site on the north and west. Penns Neck Township is located to the south. The types of material(s) handled or generated as a result of NL Industries operations were:

1. acids
2. petroleum by-products
3. lead
4. ferrous sulfate
5. plastic
6. sodium
7. phosphorus

The Removal Action Branch recently undertook a removal action to stabilize on-site slag piles and prevent leaching of heavy metals. This action was accomplished by application of an encapsulant over said slag piles. Reports of discoloration of soil adjacent to the slag brought about this investigation.

2.0 OBJECTIVE

The objective of this sample program is to determine:

1. If heavy metal contamination of soils surrounding encapsulated slag piles exist
2. the extent of contamination
3. the magnitude of contamination

For the purpose of:

1. Support of Action Memo
2. enforcement action
3. excavation and disposal decision

The data will be evaluated against:

1. established federal action levels for removal

3.0 QUALITY ASSURANCE OBJECTIVE

The objectives of this sampling event applies to the following parameters:

Parameter	Matrix	Intended Use of Data	QA Objective
TCL Metals	Soil	Excavation/disposal	QA-2

4.0 APPROACH AND SAMPLING METHODOLOGIES

4.1 Media

This event involves the assessment of the following media:

1. soil

Soil samples will be collected in 8 oz. glass containers per sample location with the use of disposable plastic scoops. These require no preservation.

4.2 Sampling Design

The sampling design for this sampling event is based on the following rationale:

The soil samples will be taken from approximately 9 locations on the NL Industries site. Two samples will be obtained solely from the slag area, with the remaining 7 samples obtained from adjacent locations where leaching and migrating of contaminants is suspected.

4.3 Approach

All sampling will be performed in modified Level D PPE using Tyveks, booties, safety glasses and surgical gloves as a minimum level of protection. Air monitoring will be performed with an OVA, prior to initiating the sampling event. Action levels for upgrading of PPE will remain consistent with that of the site safety plan.

5.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The EPA On-Scene Coordinator, Eugene Dominach will provide direction to the Technical Assistance Team (TAT) concerning project sampling needs and objectives. Sampling equipment, personnel and the shipment of the samples to the laboratory for analytical services will be provided by TAT.

The following TAT field sampling personnel will be engaged on site for this event:

Personnel	Responsibility
Carl Kelley	Task Leader/Sampling Operations
John Johnson	QA/QC/Sampling Operations
Anibal Diaz	Quality Assurance Officer

6.0 STANDARD OPERATING PROCEDURES

6.1 Sample Documentation

All sample documents will be completed legibly in ink and recorded in the field log book.

The following (at minimum) will be indicated:

1. Site name and project number
2. Name(s) of personnel on site
3. Dates and times of all entries
4. Descriptions of all activities, including site entry and exit times
5. Noteworthy events
6. Weather conditions
7. Site observations
8. Identification and description of samples and location
9. Date and time of sample collections, along with chain of custody information
10. ERCS contractor information, including names of on site personnel

6.2 Chain of Custody Record

A chain of custody record will be maintained from the time the sample is taken to the time of its final deposition. The transfer of custody will be noted and signed for, and a copy of this record kept by each individual who signed.

The Chain of Custody record will include (at minimum) the following:

1. Sample identification number
2. Sample information
3. Sample location
4. Sample date
5. Name(s) and signature(s) of sampler(s)
6. Signature(s) of any individual(s) with control over samples.

6.3 Sample Handling and Shipment

Each of the sample bottles will be sealed and labeled according to the following protocol. Caps will be secured with custody seals. Bottle labels will contain all required information including sample number, time and date of collection, analysis requested, and preservative used. Sealed bottles will be placed in large metal or plastic coolers, and padded with an absorbent material such as vermiculite.

All sample documents will be affixed to the underside of each cooler lid. The lid will be sealed and affixed on at least two sides with EPA custody seals so that any sign of tampering is easily visible.

7.0 **SCHEDULE OF ACTIVITIES**

1. Sampling Date 8/15/89
2. Shipping Date 8/21/89
3. Verbals Expected 1 week from shipping date
4. Written Expected 2 weeks from shipping event
5. Final Report to be submitted with action memorandum

8.0 **QUALITY ASSURANCE REQUIREMENTS**

At a minimum these elements will be addressed:

1. Three surrogate recoveries
2. Chain of Custody Documentation
3. Instrument Calibration
4. Holding Time Documentation
5. Detection Limits
6. Narrative of Laboratory Observations

QA/QC Compliance review by QA Officer or/and MMB.

9.0 DELIVERABLES

This sampling event requires analytical services. Documentation of laboratory selection, raw data or results will be provided in the analytical report. Verbal result of analysis is expected within 1 week of sample recepit, followed by a written report of the laboratory results a week later.

1010239

ADDITIONAL DOCUMENTATION RELATING TO THIS SECTION CAN BE FOUND IN THE FOLLOWING SECTION:

SECTION: 2.3.1 Site File

DOCUMENT DATE: August 1989

DOCUMENT TITLE: NL Industries Sampling Plan

100240

EIRA ENVIRONMENTAL INDUSTRIAL RESEARCH ASSOCIATES, INC.

FACSIMILE COVER PAGE

Please deliver to:

NAME: Anibel Diaz

DATE: 6/12/90

TIME: 3:45

FROM: Kathy Kauk

Total Number of Pages: 6

SAS 5405B. Report going out tonight via Fed Ex.

k

161 James Dr. West • St. Rose, LA 70087 • (504) 469-0333

100241

EPA SAMPLE NO.

5405B-01

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: EIRA Contract: 68-D9-0092

Lab Code: EIRA Case No.: SAS No.: 5405B SDG No.: 5405B-01

Matrix: (soil/water) SOIL Lab Sample ID: L005HX01

Sample wt/vol: 5. (g/mL) G Lab File ID: B159A050

Level: (low/med) MED Date Received: 5/24/90

% Moisture: not dec. 0. dec. 0. Date Extracted: 5/30/90

Extraction: (SepF/Cont/Sonc) JAR Date Analyzed: 6/ 8/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	1000.	U
11104-28-2	Aroclor-1221	1000.	U
11141-16-5	Aroclor-1232	1000.	U
53469-21-9	Aroclor-1242	23000.	–
12672-29-6	Aroclor-1248	1000.	U
11097-69-1	Aroclor-1254	2000.	U
11096-82-5	Aroclor-1260	2900.	–

EPA SAMPLE NO.

5405B-02

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

Lab Name: EIRA Contract: 68-D9-0092

Lab Code: EIRA Case No.: SAS No.: 5405B SDG No.: 5405B-01

Matrix: (soil/water) SOIL Lab Sample ID: L005HX02

Sample wt/vol: 5. (g/mL) G Lab File ID: B159A051

Level: (low/med) MED Date Received: 5/24/90

% Moisture: not dec. 0. dec. 0. Date Extracted: 5/30/90

Extraction: (SepF/Cont/Sonc) JAR Date Analyzed: 6/ 8/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	-----Aroclor-1016	1000.	U
11104-28-2	-----Aroclor-1221	1000.	U
11141-16-5	-----Aroclor-1232	1000.	U
53469-21-9	-----Aroclor-1242	15000.	
12672-29-6	-----Aroclor-1248	1000.	U
11097-69-1	-----Aroclor-1254	2000.	U
11096-82-5	-----Aroclor-1260	1800.	J

100243

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK01

Lab Name: EIRA Contract: 68-D9-0092

Lab Code: EIRA Case No.: SAS No.: 5405B SDG No.: 5405B-01

Matrix: (soil/water) SOIL Lab Sample ID: BLANK-1

Sample wt/vol: 5. (g/mL) G Lab File ID: B159A049

Level: (low/med) MED Date Received: 0/ 0/ 0

% Moisture: not dec. 0. dec. 0. Date Extracted: 5/30/90

Extraction: (SepF/Cont/Sonc) JAR Date Analyzed: 6/ 8/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	-----Aroclor-1016	1000.	U
11104-28-2	-----Aroclor-1221	1000.	U
11141-16-5	-----Aroclor-1232	1000.	U
53469-21-9	-----Aroclor-1242	1000.	U
12672-29-6	-----Aroclor-1248	1000.	U
11097-69-1	-----Aroclor-1254	2000.	U
11096-82-5	-----Aroclor-1260	2000.	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK01-MS

Lab Name: EIRA Contract: 68-D9-0092

Lab Code: EIRA Case No.: SAS No.: 5405B SDG No.: 5405B-01

Matrix: (soil/water) SOIL Lab Sample ID: L005HX04

Sample wt/vol: 5. (g/mL) G Lab File ID: B160A002

Level: (low/med) MED Date Received: 5/24/90

% Moisture: not dec. 0. dec. 0. Date Extracted: 5/30/90

Extraction: (SepF/Cont/Sonc) JAR Date Analyzed: 6/ 8/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	-----Aroclor-1016	1000.	U
11104-28-2	-----Aroclor-1221	1000.	U
11141-16-5	-----Aroclor-1232	1000.	U
53469-21-9	-----Aroclor-1242	1000.	U
12672-29-6	-----Aroclor-1248	1000.	U
11097-69-1	-----Aroclor-1254	5100.	—
11096-82-5	-----Aroclor-1260	2000.	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

5405B-01MS

Lab Name: EIRA Contract: 68-D9-0092

Lab Code: EIRA Case No.: SAS No.: 5405B SDG No.: 5405B-01

Matrix: (soil/water) SOIL Lab Sample ID: L005HX03

Sample wt/vol: 5. (g/mL) G Lab File ID: B160A001

Level: (low/med) MED Date Received: 5/24/90

% Moisture: not dec. 0. dec. 0. Date Extracted: 5/30/90

Extraction: (SepF/Cont/Sonc) JAR Date Analyzed: 6/ 8/90

GPC Cleanup: (Y/N) N pH: 7.0 Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	-----Aroclor-1016	1000.	U
11104-28-2	-----Aroclor-1221	1000.	U
11141-16-5	-----Aroclor-1232	1000.	U
53469-21-9	-----Aroclor-1242	22000.	—
12672-29-6	-----Aroclor-1248	1000.	U
11097-69-1	-----Aroclor-1254	2000.	U
11096-82-5	-----Aroclor-1260	2900.	

100246

CHAIN OF CUSTODY RECORD

ENVIRONMENTAL PROTECTION AGENCY - REGION II
ENVIRONMENTAL SERVICES DIVISION
EDISON, NEW JERSEY 08817

T2 08237

Name of Unit and Address:

NL Industries Pedricktown, Salem County, NJ

Sample Number	Number of Containers	Description of Samples
DC#001	3	Brown Aqueous
RC#002	3	Roll-off solid

Person Assuming Responsibility for Sample:	Time	Date
Carl Kelley Response Specialist Roy F Weston Inc	1145	1/26/90

Sample Number	Relinquished By:	Received By:	Time	Date	Reason for Change of Custody
DC#001	Carl Kelley	[illegible] CH M [illegible]	1700	1/26/90	Shipment for analysis
RC#001	Carl Kelley	[illegible] CH M [illegible]	1700	1/26/90	Shipment for analysis

Page No. 1 of 1

P & P LABORATORIES, INC.
ENVIRONMENTAL & CLINICAL TOXICOLOGY
2025 Woodlynne Avenue
Woodlynne, NJ 08107
(609) 962-6611
DEP # 04479

CERTIFICATE OF ANALYSIS

IDENTIFICATION
Roy F. Weston, Inc.
Suite 201
1090 King George Post Rd.
Edison, NJ 08837

ID #....:C3355
Sample # 002

SAMPLE SOURCE
source..........:O.H.M. Corp.
White Flakes
collection......:12/05/89
received....... :12/05/89 17:24
completion......:12/20/89
collected by....:NL Industries

RESULTS (mg/l unless specified)

TEST PARAMETER	RESULTS	TEST PARAMETER	RESULTS	COMMENTS
BOD(5).............		Tot. Alkalinity...		
COD................		Chlorine Demand...		
TOC................		Chlorine Residual .		
T.Suspended Solids.		Chlorides.........		
Total Solids.......		Petro-hydrocarbons		
T. Diss. Solids....		Hardness as CaCO3 .		
Sett. Solids(ml/l).		Aluminum..........		
pH.(Units).........		Arsenic...........		
Phenols.(ug/l).....		Barium............		
Cyanide(Total).....		Cadmium...........		
Cyanide(Free)......		Calcium...........		
Fluoride.........		Chromium (Tot)....		
ABS/LAS(mg/l LAS)..		Chromium (Hex)....		
Oil & Grease.......		Copper............		
TK Nitrogen as N...		Iron..............		
Ammonia as N.......		Lead..............		
Org. Nitrogen as N		Magnesium.........		
Nitrate - N........		Manganese.........		
Nitrite - N........		Mercury (ug/l)....		
T. Phosphate (P)...		Nickel............		
Odor...............		Potassium.........		
Sulfate............		Selenium (ug/l)...		
Silver.............		Sodium Hydroxide..	99 % Pure	
Color..............		Zinc..............		
Turbidyty(NTU).....		Fecal Coliform *..		
Corrositivity......		Total Coliform *..		
Temperature F-deg..		S.Plate Count.....		
Langelier Index				

* col/100 ml

Henry J. Pielichowski
Tech. Lab. Supervisor

P & P LABORATORIES, INC.
ENVIRONMENTAL & CLINICAL TOXICOLOGY
2025 Woodlynne Avenue
Woodlynne, NJ 08107
(609) 962-6611
DEP # 04479

CERTIFICATE OF ANALYSIS

IDENTIFICATION
Roy F. Weston, Inc.
Suite 201
1090 King George Post Rd.
Edison, NJ 08837

ID #....:C3355
Sample # 004

SAMPLE SOURCE
source..........:O.H.M. Corp.
White Chunks
collection......:12/05/89
received....... :12/05/89 17:24
completion......:12/20/89
collected by....:NL Industries

RESULTS (mg/l unless specified)

TEST PARAMETER	RESULTS	TEST PARAMETER	RESULTS	COMMENTS
BOD(5).............		Tot. Alkalinity...		
COD................		Chlorine Demand...		
TOC................		Chlorine Residual.		
T.Suspended Solids.		Chlorides.........		
Total Solids.......		Petro-hydrocarbons		
T. Diss. Solids....		Hardness as CaCO3.		
Sett. Solids(ml/l).		Aluminum..........		
pH.(Units).........		Arsenic...........		
Phenols.(ug/l).....		Barium............		
Cyanide(Total).....		Cadmium...........		
Cyanide(Free)......		Calcium...........		
Fluoride.........		Chromium (Tot)....		
ABS/LAS(mg/l LAS)..		Chromium (Hex)....		
Oil & Grease.......		Copper............		
TK Nitrogen as N...		Iron..............		
Ammonia as N.......		Lead..............		
Org. Nitrogen as N		Magnesium.........		
Nitrate - N........		Manganese.........		
Nitrite - N........		Mercury (ug/l)....		
Phosporus..........		Nickel............		
Odor...............		Potassium.........		
Sulfate............		Selenium (ug/l)...		
Silver.............		Sodium Carbonate..	99 % Pure	
Color..............		Zinc..............		
Turbidyty(NTU).....		Fecal Coliform *..		
Corrositivity......		Total Coliform *..		
Temperature F-deg..		S.Plate Count.....		
Langelier Index				

* col/100 ml

Henry J. Pielichowski
Tech. Lab. Supervisor

100249

CHAIN OF CUSTODY RECORD

ENVIRONMENTAL PROTECTION AGENCY – REGION II
Environmental Services Division
EDISON, NEW JERSEY 08817

Name of Unit and Address:
Roy F. Weston, INC. Suite 201 1090 King George Post Road Edison, NJ 08837

Sample Number	Number of Containers	Description of Samples
ØØ6	1	Material From Roll off OHM Job 7925 ATTN: Sample Receiving

Person Assuming Responsibility for Sample:	Time	Date
Carl Kelley	0955	12/8/89

Sample Number	Relinquished By:	Received By:	Time	Date	Reason for Change of Custody
ØØ6	Carl Kelley	James R. Maxwell	1200	12/8/89	Shipping

Page No. 1

and 1110101(5? # 2050 # 1 500
2051 $ 50.00

OHM

CHAIN-OF-CUSTODY RECORD

Form
Field Technical Serv
Rev. 0

No. 47948

O.H. MATERIALS CORP. • P.O. BOX 551 • FINDLAY, OH 45839-0551 • 419-423-3526

PROJECT NAME: NL INDUSTRIES
PROJECT LOCATION: PEDRICKTOWN, NJ
PROJ. NO.: 7425E
PROJECT CONTACT: Andrew Miller
PROJECT TELEPHONE NO.: (609) 299-6830
CLIENT'S REPRESENTATIVE: GENE DOMINACH
PROJECT MANAGER/SUPERVISOR: LONNIE GUINN MID DIV

ANALYSIS DESIRED (INDICATE SEPARATE CONTAINERS): CONFIRMATION

ITEM NO.	SAMPLE NUMBER	DATE	TIME	COMP	GRAB	SAMPLE DESCRIPTION (INCLUDE MATRIX AND POINT OF SAMPLE)	NUMBER OF CONTAINERS	CONFIRMATION							REMARKS
1	ØØ1	12/5/87	0900	✓		WHITE POWDER WHICH HAS BEEN SOLIDIFIED	1	X							TEST FOR SODIUM HYDROXIDE
2	ØØ2	12/5/87	0900	✓		WHITE POWDER - 3 drums	1	X							TEST FOR SODIUM HYDROXIDE
3	ØØ3	12/5/87	0900		✓	RED MASS	1	X							TEST FOR [illegible]
4	ØØ4	12/5/87	1000		✓	WHITE CHUNKS	1	X							TEST FOR SODIUM CARBONATE
5	ØØ5	12/5/87	1000		✓	YELLOW CHUNKS	1	X							TEST FOR SULFIDE
6															
7															
8															
9															
10															

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	001-005	Kenny E. [signature]	[signature]	12/5/87	1401
2					
3					
4					

REMARKS
CONTACT (1) GENE DOMINACH - (201) 321-6166
(2) CARL KELLER - (201) 225-
FOR VERBAL - [illegible]

SAMPLER'S SIGNATURE: [signature] KENNY E.

A Subsidiary of Environmental Treatment and Technologies Corp.
The Environmental Services Company

NSFER 3

0C200T

100251

ANA

205 Campus Plaza I, Raritan Center, Edison, NJ 08837 (201) 225-4111

Laboratory ID: 07531

November 20, 1989

Roy F. Weston
1090 King Georges Post Road
Edison, NJ 08837

Analytical Report: 89355 Project: NL Industries

This report covers the analysis of eight (8) samples submitted to Analab on November 14, 1989. The following analyses were requested:

Lead (8)

RECEIVED
21 1989
TAT REG II

Respectfully submitted,

James Menoutis, MAIC, CPC
Manager of Laboratory Services

JM/mfb

NARRATIVE

Site Name N L Industries

Laboratory Name Analab

Introduction

The laboratory's portion of this Case consisted of 7 air samples collected on 11/14/89

The laboratory reported NO problem(s) with the receipt of these samples.

The laboratory reported NO problems with the analyses of compounds.

The evaluator has commented on the criteria specified under each fraction heading. All criteria have been assessed, but no discussion is given where the evaluator has determined that criteria were adequately performed or require no comment.

ENVIROTECH RESEARCH, INC.

Roy F. Weston, Inc.
1090 King Georges Post Road
Edison, NJ 08837
Attention: Mr. Anibal Diaz

Report Date: 8/28/89
Job No.: 5626
N.J. Certified Lab No. 12543

QA SUMMARY - DUPLICATE and BLANK

METALS - SOIL

Parameter	Sample Lab No. 27673SPK 94.2% Solid mg/kg (Dry Wt.)	Duplicate Lab No. 27673SPK 94.2% Solid mg/kg (Dry Wt.)	Lab Blank mg/kg[1]
Aluminum	3780	3160	ND
Antimony	126	149	ND
Arsenic	70.3	32.4	ND
Barium	437	439	ND
Beryllium	9.77	9.98	ND
Cadmium	14.9	17.0	ND
Calcium	6430	8040	ND
Chromium	110	110	ND
Colbalt	107	102	ND
Copper	101	105	ND
Iron	6630	5960	ND
Lead	10000	11100	ND
Magnesium	6590	6600	ND
Manganese	142	139	ND
Mercury	0.64	0.64	ND
Nickel	107	108	ND
Potassium	5220	5100	ND
Selenium	4.1	8.1	ND
Silver	7.43	7.64	ND
Sodium	5480	5370	ND
Thallium	8.12	8.50	ND
Vandium	114	111	ND
Zinc	182	185	ND

[1]Blank concentrations based on the following sample masses:
All metals except mercury - 1.0 gram.

ENVIROTECH RESEARCH, INC.

Roy F. Weston, Inc.
1090 King Georges Post Road
Edison, NJ 08837
Attention: Mr. Anibal Diaz

Report Date: 8/28/89
Job No.: 5626
N.J. Certified Lab No. 12543

TCL METALS

Parameter	Lab No. 27674 Client ID: Sample 011 75.1% Solid Units: mg/kg (Dry Weight)	Detection Limit Units: mg/kg	Method Code[1]
Aluminum	3020	40	P
Antimony	754	12	P
Arsenic	361	1.0	F
Barium	839	40	P
Beryllium	1.3	1.0	P
Cadmium	107	1.0	P
Calcium	6930	1000	P
Chromium	65.5	2.0	P
Cobalt	78	10	P
Copper	4950	5.0	P
Iron	148000	20	P
Lead	118000	10	A
Magnesium	ND	1000	P
Manganese	265	3.0	P
Mercury	0.27	0.1	CV
Nickel	295	8.0	P
Potassium	1320	1000	P
Selenium	4.4	1.0	F
Silver	12	2.0	P
Sodium	8350	1000	P
Thallium	3.7	1.0	F
Vanadium	395	10	P
Zinc	5680	4.0	P

[1]Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

ENVIROTECH RESEARCH, INC.

Roy F. Weston, Inc.
1090 King Georges Post Road
Edison, NJ 08837
Attention: Mr. Anibal Diaz

Report Date: 8/28/89
Job No.: 5626
N.J. Certified Lab No. 12543

TCL METALS

Parameter	Lab No. 27672 Client ID: Sample 009 94.3% Solid Units: mg/kg (Dry Weight)	Detection Limit Units: mg/kg	Method Code[1]
Aluminum	2620	40	P
Antimony	148	12	P
Arsenic	30.1	1.0	F
Barium	ND	40	P
Beryllium	ND	1.0	P
Cadmium	8.3	1.0	P
Calcium	1700	1000	P
Chromium	14	2.0	P
Cobalt	ND	10	P
Copper	56.8	5.0	P
Iron	6010	20	P
Lead	13900	10	A
Magnesium	1130	1000	P
Manganese	44.9	3.0	P
Mercury	ND	0.1	CV
Nickel	9.3	8.0	P
Potassium	ND	1000	P
Selenium	ND	1.0	F
Silver	ND	2.0	P
Sodium	ND	1000	P
Thallium	ND	1.0	F
Vanadium	12	10	P
Zinc	120	4.0	P

[1]Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

ENVIROTECH RESEARCH, INC.

Roy F. Weston, Inc.
1090 King Georges Post Road
Edison, NJ 08837
Attention: Mr. Anibal Diaz

Report Date: 8/28/89
Job No.: 5626
N.J. Certified Lab No. 12543

TCL METALS

Parameter	Lab No. 27670 Client ID: Sample 007 85.2% Solid Units: mg/kg (Dry Weight)	Detection Limit Units: mg/kg	Method Code[1]
Aluminum	3400	40	P
Antimony	73	12	P
Arsenic	33.1	1.0	F
Barium	ND	40	P
Beryllium	ND	1.0	P
Cadmium	2.3	1.0	P
Calcium	ND	1000	P
Chromium	11	2.0	P
Cobalt	ND	10	P
Copper	31	5.0	P
Iron	7610	20	P
Lead	10500	10	A
Magnesium	ND	1000	P
Manganese	27	3.0	P
Mercury	ND	0.1	CV
Nickel	ND	8.0	P
Potassium	ND	1000	P
Selenium	ND	1.0	F
Silver	ND	2.0	P
Sodium	ND	1000	P
Thallium	ND	1.0	F
Vanadium	19	10	P
Zinc	56.8	4.0	P

[1]Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

ENVIROTECH RESEARCH, INC.

Roy F. Weston, Inc.
1090 King Georges Post Road
Edison, NJ 08837
Attention: Mr. Anibal Diaz

Report Date: 8/28/89
Job No.: 5626
N.J. Certified Lab No. 12543

TCL METALS

Parameter	Lab No. 27668 Client ID: Sample 005 78.5% Solid Units: mg/kg (Dry Weight)	Detection Limit Units: mg/kg	Method Code[1]
Aluminum	6590	40	P
Antimony	367	12	P
Arsenic	1100	1.0	F
Barium	1940	40	P
Beryllium	1.5	1.0	P
Cadmium	484	1.0	P
Calcium	12100	1000	P
Chromium	100	2.0	P
Cobalt	45.6	10	P
Copper	1350	5.0	P
Iron	129000	20	P
Lead	46200	10	A
Magnesium	1940	1000	P
Manganese	1050	3.0	P
Mercury	ND	0.1	CV
Nickel	946	8.0	P
Potassium	ND	1000	P
Selenium	4.14	1.0	F
Silver	1.8	2.0	P
Sodium	21200	1000	P
Thallium	ND	1.0	F
Vanadium	281	10	P
Zinc	3400	4.0	P

[1]Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

ENVIROTECH RESEARCH, INC.

Roy F. Weston, Inc.
1090 King Georges Post Road
Edison, NJ 08837
Attention: Mr. Anibal Diaz

Report Date: 8/28/89
Job No.: 5626
N.J. Certified Lab No. 12543

TCL METALS

Parameter	Lab No. 27666 Client ID: Sample 003 94.9% Solid Units: mg/kg (Dry Weight)	Detection Limit Units: mg/kg	Method Code[1]
Aluminum	2720	40	P
Antimony	175	12	P
Arsenic	96.4	1.0	F
Barium	85	40	P
Beryllium	ND	1.0	P
Cadmium	19.8	1.0	P
Calcium	1060	1000	P
Chromium	33.5	2.0	P
Cobalt	14	10	P
Copper	235	5.0	P
Iron	17700	20	P
Lead	32400	10	A
Magnesium	ND	1000	P
Manganese	72.1	3.0	P
Mercury	ND	0.1	CV
Nickel	164	8.0	P
Potassium	ND	1000	P
Selenium	1.4	1.0	F
Silver	5.0	2.0	P
Sodium	2730	1000	P
Thallium	ND	1.0	F
Vanadium	35	10	P
Zinc	376	4.0	P

[1]Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

ENVIROTECH RESEARCH, INC.

Roy F. Weston, Inc.
1090 King Georges Post Road
Edison, NJ 08837
Attention: Mr. Anibal Diaz

Report Date: 8/28/89
Job No.: 5626
N.J. Certified Lab No. 12543

TCL METALS

Parameter	Lab No. 27664 Client ID: Sample 001 54.5% Solid Units: mg/kg (Dry Weight)	Detection Limit Units: mg/kg	Method Code[1]
Aluminum	6150	40	P
Antimony	192	12	P
Arsenic	215	1.0	F
Barium	1040	40	P
Beryllium	ND	1.0	P
Cadmium	223	1.0	P
Calcium	5630	1000	P
Chromium	66.4	2.0	P
Cobalt	15	10	P
Copper	728	5.0	P
Iron	58100	20	P
Lead	19200	10	A
Magnesium	1640	1000	P
Manganese	809	3.0	P
Mercury	ND	0.1	CV
Nickel	143	8.0	P
Potassium	ND	1000	P
Selenium	5.0	1.0	F
Silver	ND	2.0	P
Sodium	5720	1000	P
Thallium	ND	1.0	F
Vanadium	194	10	P
Zinc	2200	4.0	P

[1]Method Code: P-ICP, A-Flame AA, F-Furnace AA, CV-Manual Cold Vapor.

ANA . . . 205 Campus Plaza I, Raritan Center, Edison, NJ 08837 (201) 225-4111

S E C T I O N 1

METHODOLOGY

Figure 1 Air Data Sheet

Date 11/14/89

Site Name NL INDUSTRIES

Sampled By M. MENTZEL TAT-2

Wind Direction FROM EAST

Temperature (°F avg.) 70

Humidity (%) 80

Barometric Pressure —

Sample No.	Location	Pump ID No.	Start Time (Hours)	Pump Rate (LPM)	Stop Time	Stop Reading	Total Liters
1 T	PARKING LOT	TAT-4	0722	3.0	1327	360 MIN	1080
2 T	NEAR R.R.	TAT-3	0734	3.0	1324	345 MIN	1035
3 T	BUILDING	ERT-1	0800	3.0	1345	335 MIN	1005
4 T	PILE C	TAT-5	0742	3.0	PUMP INOPERABLE - REPLACED		
5 T	ACCESS ROAD TO LANDFILL	ERT-3	0728	3.0	1320	320 MIN	960
6 T	BLANK	NA	NA	NA	NA	NA	0
7 T	BLANK	NA	NA	NA	NA	NA	0
8 T	MATRIX SPIKE	NA	NA	NA	NA	NA	0
4 T	PILE C	ERT#4	1000	3.5	1350	82 MIN	287

Comments (Rain, Damaged Pump, Etc.)

1200: PUMP RATES CHECKED ALL PUMPS OK EXCEPT FOR 4T - PUMP REPLACED

ANA

205 Campus Plaza I, Raritan Center Edison NJ 08837 (201) 225-4111

LABORATORY CHRONICLE

CLIENT: NL Industries REPORT NO.: 89355

SAMPLING DATE: 11/14/89 DATE RECEIVED BY LABORATORY: 11/14/89

LAB SAMPLE ID	EXTRACTION DATE	CLIENT SAMPLE DESIGNATION	PARAMETER	DATE ANALYZED	ANALYST
89-355-1	11/15/89	Parking Lot	LEAD	11/15/89	DY
89-355-2	11/15/89	Near R.R.	LEAD	11/15/89	DY
89-355-3	11/15/89	Building	LEAD	11/15/89	DY
89-355-4	11/15/89	Pile C	LEAD	11/15/89	DY
89-355-5	11/15/89	Access Rd.	LEAD	11/15/89	DY
89-355-6	11/15/89	Blank	LEAD	11/15/89	DY
89-355-7	11/15/89	Blank	LEAD	11/15/89	DY
89-355-8	11/15/89	Matrix Spike	LEAD	11/15/89	DY

JM/cmc

ANA 205 Campus Plaza I, Raritan Center, Edison, NJ 08837 / (201) 225-4111

ANALYTICAL REPORT

CLIENT: Roy F. Weston
CLIENT PROJECT: NL Industries
ANALYSIS DATE: 11/15/89
REPORT DATE: 11/16/89

PROJECT: 89355
ANALYST: DY
MATRIX : Filter

CLIENT ID	LAB ID	LEAD RESULTS (MG/M^3)
1T	89-355-1	<0.0046
2T	89-355-2	<0.0048
3T	89-355-3	<0.0050
4T	89-355-4	<0.0174
5T	89-355-5	<0.0052
6T	89-355-6	<5.0 Ug
7T	89-355-7	<5.0 Ug

COMMENTS:
N.D. = NOT DETECTED AT OR ABOVE THE METHOD DETECTION LIMIT (MDL).
< = LESS THAN

JM/mfb

ANA
205 Campus Plaza I, Raritan Center, Edison, NJ 08837 (201) 225-4111

METHOD BLANK SUMMARY

MATRIX: Water

THE FOLLOWING SAMPLES ARE COVERED BY THIS REPORT:

89-355 Series

PARAMETER	METHOD BLANK RESULTS (Ug)	MDL (Ug)
LEAD	<5.0	5.0

JM/cmc

RECORD OF COMMUNICATION

☐ PHONE CALL ☐ DISCUSSION ☐ FIELD TRIP ☐ CONFERENCE ☐ OTHER (SPECIFY)

(Record of item checked above)

TO: GEORGE KARRAS

FROM: RSCC/ESAT

DATE 3/21/90

TIME

SUBJECT

CLP Inorganic Data Packages for Quality Assurance Review

SUMMARY OF COMMUNICATION

Attached are the following CLP Inorganic/SAS Data Packages to be reviewed for Quality Assurance.

SITE	CASE/SAS NO.	LABORATORY	MATRIX	NO. of SAMPLES
RINGWOOD MINES TCDM/RI/FS	13524	SKINER	WATER	10
C & J DISPOSAL AEBA/RI/FS	5222B	ICM	WATER	42
MAPLEWOOD ROAD SITE FITN/SI	13550	CEIMIC	WATER SOIL	7 6
ROLLINS ENV SERV TCDM/RI/FS/OVERSIGHT	13539	SKINER	WATER	2
N.L. INDUSTRIES TATW/RA	13204	CHEMTECH	WATER	9
HERTEL LF ATAM/RI/FS	13555	KEYPA	WATER SOIL	2 1

CONCLUSIONS, ACTION TAKEN OR REQUIRED

RECEIVED
MAY 18 1990
S & M BRANCH

INFORMATION COPIES
TO:

100266

CHAIN OF CUSTODY RECORD

ENVIRONMENTAL PROTECTION AGENCY — REGION II
Environmental Services Division
EDISON, NEW JERSEY 08817

JOB# 5626

Name of Unit and Address

Roy F Weston, INC   Suite 201 1090 King George Post Rd. Edison, NJ 08837

Sample Number	Number of Containers	Description of Samples
001	1	soil - TCL metals - 27664
002	1	soil - TCL metals - 27665
003	1	soil - TCL metals - 27666
004	1	soil - TCL metals - 27667
005	1	soil - TCL metals - 27668
006	1	soil - TCL metals - 27669
007	1	soil - TCL metals - 27670
008	1	soil - TCL metals - 27671
009	1	soil - TCL metals - 27672
010	1	soil - TCL metals - 27673
011	1	soil - TCL metals - 27674
012	1	soil - TCL metals - 27675

Rush

Person Assuming Responsibility for Sample:	Time	Date
Carl Kelley	1300	8/15/89

Sample Number	Relinquished By:	Received By:	Time	Date	Reason for Change of Custody
All	Carl Kelley	John Johnson	1330	8/17/89	Delivery to lab.
All	John Johnson	Burlon Haney	1540	8/21/89	Delivery to Lab
All	Burlon Haney	[illegible]	4:24pm	8/21/89	RECV'D @ LAB

Page No.

WESTON MANAGERS DESIGNERS CONSULTANTS
1090 King Georges Post Rd.
Suite 201, Edison, NJ 08837 908-225-6116

100267

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036

TRANSMITTAL MEMO

TO: Gene Dominich, OSC
Removal Action Branch

FROM: Jennifer Leahy, Inorganic Data Validator
Ron Starks, TAT PM

SUBJECT: Inorganic Data Validation

DATE September 14, 1993

The purpose of this memo is to transmit the following information:

SITE: NL Industries

SUBJECT: 5 Soil Samples Analyzed for Metals

CC: TDD: 02-9308-05
ASC W.O. #0687
TAT PM: Starks

MEMORANDUM

DATE: September 14, 1993

TO: Gene Dominach, OSC
USEPA Region 2

FROM: Jennifer Leahy, INorg, Validator
IAT Data Review Team

SUBJECT: QA/QC Compliance Review Summary

As requested, quality control and performance measures for the data packages noted have been examined and compared to EPA standards for compliance. Measures for the following general areas were evaluated:

Data Completeness	Blanks
Spectra Matching Quality	DFTPP and BFB Tuning
Surrogate Spikes	Chromatography
Matrix Spikes/Duplicates	Holding Times
Calibration	Compound ID (HSL, TIC)

Any statistical measures used to support the following conclusions are attached so that the review may be reviewed by others.

Summary of Results

	I Volatiles	II B/N/A	III Pesticide	IV Other
Acceptable as Submitted				X
Acceptable with Comments				
Unacceptable, Action Pending				
Unacceptable				

Data Reviewed by: Jennifer Leahy Date: 9/14/93
Review Authorized By: Date:
Signature:
Area Code/Phone No.: (908) 225-6116

NARRATIVE

Case No. 4280

Site Name NL Industries

Laboratory Name Accredited Laboratories

Introduction

The laboratory's portion of this Case consisted of 5 Soil samples collected on 8/20, 19 93

The laboratory reported NO problem(s) with the receipt of these samples.

The laboratory reported NO problems with the analyses of ______ compounds.

The evaluator has commented on the criteria specified under each fraction heading. All criteria have been assessed, but no discussion is given where the evaluator has determined that criteria were adequately performed or require no comment. Details relevant to these comments are given on the forms in Appendix A. Amounts of detected compounds are summarized in Appendix B.

STANDARD OPERATING PROCEDURE

Page 27 of 34

tle: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

se#	4280	Site	NJ Drag	Matrix: Soil	5
G#		Lab	Associated	Water	—
ntractor	TAT 2	Reviewer	J. Conley	Other	—

1.1 Validation Flags- The following flags have been applied in red by the data validator and must be considered by the data user.

J- This flag indicates the result qualified as estimated

Red- Line- A red-line drawn through a sample result indicates unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0.

1.2 The data assessment is given below and on the attached sheets.

(1) The selenium correlation coefficient was < .995 therefore, the associated sample results were flagged as "J"
"J" SE → 9308507-09, 9308511

(2) Aluminum, Arsenic Barium Beryllium, Calcium Cobalt, Manganese, Mercury, Nickel, Selenium + zinc field dup analysis RPD was ≥ 100%. Therefore the associated sample results were flagged as "J"
"J" (Al, As, BA, BE, CA, Co, MN, Hg, Ni, SE + ZN) →
9308510 + 9308511

A.2 (continuation)

.tle: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

.2.3 Contract-Problem/Non-Compliance

____

MEB/ESAT Rviewer: ____________________ Date: __________
Signature

ntractor Reviewer: Jennifer Locky Date: 9/14/93
Signature

Verified by: ____________________ Date: __________

:le: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Date: Jan. 1992
Number: HW-2
Revision: 11

Inorganic Analysis

INORGANIC REGIONAL DATA ASSESSMENT

Region 2

E NO. 4280

SITE Ni Industries

RATORY Accuanalytical

NO. OF SAMPLES/ MATRIX 6 Soil

REVIEWER (IF NOT ESD) J Healy

REVIEWER'S NAME

: ACTION FYI

COMPLETION DATE Sept 14, 1993

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CYANIDE
HOLDING TIMES	O	O	O	NA
CALIBRATIONS		4		
BLANKS		O		
ICS				
LCS	✓	O		
DUPLICATE ANALYSIS	4	4		
MATRIX SPIKE	O	O		
MSA				
SERIAL DILUTION				
SAMPLE VERIFICATION				
OTHER QC				
OVERALL ASSESSMENT	✓	✓	✓	✓

) = Data has no problems/or qualified due to minor problems.
: = Data qualified due to major problems.
: = Data unacceptable.
= Problems, but do not affect data.

:N ITEMS:

: OF CONCERN:

LE PERFORMANCE:

e: Evaluation of Metals Data for the Contract Laboratory Program
Apendix A.5: CLP Data Assessment Summary Form (Inorganics)

Date: Jan. 1992
Number: HW-2
Revision: 11

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

of Review: Inorganic

Date: Sept 14, 1993 Case #: 4780

Lab Name: Accredited

er's Initials: JL

Number of Samples: 55 ...

Analytes Rejected Due to Exceeding Review Criteria*

	Holding Times	Calibration	Prep Blank	Field Blank	Interferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
AA														
ace AA														
cury														
l														
r														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

	Holding Times	Calibration	Prep Blank	Field Blank	Interferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP								16					100	16
AA														
ace AA		4						4					10	4
cury								2						2
l		4						22						22
r														

:
terisk (*) Indicates additional exceedances of review criteria.

6

DUPLICATES

100[redacted]

EPA SAMPLE NO.

NL04
NL05

Lab Name: Accredited Laboratories Contract: ______

Lab Code: ______ Case No.: 4350 SAS No.: ______ SDG No.: ______

Matrix (soil/water): ______ Level (low/med): [illegible]

% Solids for Sample: 69.0 % Solids for Duplicate: 90.6

Concentration Units (ug/L or mg/kg dry weight): mg/kg

Analyte	Control Limit	NL04 Sample (S)	C	NL05 Duplicate (D)	C	RPD	Q	M
Aluminum		1900950.0		520950.0		115%		P
Antimony	—	—		—		—		P
Arsenic		28240.0		2484.0		168%		F
Barium		13646.5		1847.5		151%		P
Beryllium		103.5	B	27.6	B	115%		P
Cadmium	—	—		—		—		P
Calcium		114540.0		27634.5		122%		P
Chromium		1621.5		897.0	B	57%		P
Cobalt		2508.0		414.0	B	137%		P
Copper		3174.0		1518.0		70.5%		P
Iron		161115.0		250125.0		43%		P
Lead		23115.0		41955.0		70%		P
Magnesium		244065.0		83145.0		98%		P
Manganese		10455.5		2833.5		113%		P
Mercury		148.35		13.8		166%		CV
Nickel		3208.5		759.0	B	123%		P
Potassium		172845.0		41080.0		162%		P
Selenium		655.5		124.2		136%		F
Silver	—	—		—		—		P
Sodium		96025.0		56580.0		52.5%		P
Thallium	—	—		—		—		P
Vanadium		1090		1090	B	0		P
Zinc		14110.5		2794.5	B	134%		P
Cyanide								—

*Sample results figured by
form I (mg/kg) x5 x %solids

WESTON
1090 King Georges Post Rd.
Suite 201, Edison, NJ 08837 908-225-6116

1U0216

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036

ANALYTICAL SUMMARY FOR THE NL INDUSTRIES SITE

ANALYTE	SAMPLE NUMBERS				
	NL01	NL07	NL03	NL04	NL05
Aluminum	1760	5690	5260	5510 J	1510 J
Arsenic	1.1	7.1	5	82 J	7.2 J
Barium	9	29	28	39.7 J	5.5 J
Beryllium	.15 B	.47 B	.26 B	.30 BJ	.08 BJ
Cadmium		1.9	4.3		
Calcium	426	365	1230	332 J	80.1 J
Chromium	6.2	10.5	126	4.7	2.6 B
Cobalt	1.9 B	2.4 B	1.9 B	6.4 J	1.2 BJ
Copper	3.7	10.4	23.6	9.2	4.4
Iron	2930	7400	3950	467	725
Lead	40	182	1240	67	139
Magnesium	367	517	322	709	241
Manganese	19.4	16.6	27.6	30.3 J	8.5 J
Mercury		.09 B	.25	.43 J	
Nickel	4.5	8.1	12.7	9.3 J	2.2 BJ
Potassium	170 B	290	444	501	264
Selenium			.55 BJ	1.9 J	
Sodium	108	237	227	281	164
Vanadium	8.2	20.4	24.5		2 B
Zinc	17.4	22.9	65.2	40.9 J	8.1 J

NOTE:

B - Denotes concentration between IDL and CRDL.
J - Denotes concentration is an estimated value.

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Suite 201, Edison, NJ 08837 908-225-6116

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036

QA/QC COMPLIANCE REVIEW

SITE: NL Industries

SAMPLING DATE: August 20, 1993

FRACTION: Inorganic

REVIEWER: Jennifer Leahy

ANALYTE	SAMPLE NUMBER	QUALIFIER	REASON
Se	9308507-09, 9308511	"J"	Correlation coefficient less than .995
Al, As Ba, Be Ca, Co Mn, Hg Ni, Se Zn	9308510, 9308511	"J"	Field duplicate analysis RPD is greater than 100%

Roy F. Weston, Inc.
MAJOR PROGRAMS DIVISION
In Association with Foster Wheeler Enviresponse, Inc., Resource Applications, Inc., C.C. Johnson & Malhotra, P.C., R.E. Sarriera Associates, and GRB Environmental Services, Inc.

SAMPLING TRIP REPORT

SITE NAME: NL Industries

SAMPLING DATE: August 17, 1993

EPA CASE/SAS NO.: 4280

1. SITE LOCATION: Pedricktown, NJ

2. SAMPLE DESCRIPTION: See Table 1

3. LABORATORIES RECEIVING SAMPLES:

SAMPLE TYPE	NAME & ADDRESS OF LABORATORY
Inorganic (Soil)	Accredited Laboratories Carteret, NJ 07008-0369

4. SAMPLE DISPATCH DATA:

A total of five soil samples for TAL metals were delivered to Accredited Laboratories on August 20, 1993.

5. SAMPLING PERSONNEL:

NAME	ORGANIZATION	DUTIES ON SITE
Ronald Starks	TAT II	Project Manager
Victor Vicenty	TAT II	Sample QA/QC

6. ADDITIONAL COMMENTS:

All samples will be analyzed for inorganic compounds.

7. REPORT PREPARED BY: Ronald starks

8. REPORT APPROVED BY:

TABLE I
SAMPLE DESCRIPTIONS
NL INDUSTRIES
PEDRICKTOWN, NEW JERSEY
CASE NO.: 4280

SAMPLE NUMBER	TIME COLLECTED	SAMPLE TYPE	SAMPLE LOCATION
NL 01	1400	Soil	100 yards from Rt 130 ten ft. from first tree
NL 07	1420	Soil	15 ft. north of marker #2
NL 03	1445	Soil	500 ft. East of RR tracks
NL 04	1500	Soil	250 ft. east of Pedricktown Rd.
NL 05	1505	Soil	250 ft. east of Pedricktown Rd.

A rinsate blank was not collected because dedicated sampling equipment (plastic scoop) was used for each sample collected and disposed of according to EPA protocol.

WESTON · SPER
Suite 201, 1090 King Georges Post Road,
Edison, NJ 08837 • (201) 225-6116

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

TAT-02-F-04984

MEMORANDUM

TO: Eugene Dominach, OSC

FROM: Don Graham, TAT PM
Tom Mignone, TAT QC

SUBJECT: Encapsulation of Slag Piles
NL Industries, Pedricktown, NJ

DATE: November 16, 1988

In accordance with TDD #8811-08, TAT has researched options for encapsulating the slag piles at the NL Industries site to prevent any further airborne release or runoff of the slag. Upon investigating possible alternatives for encapsulating the slag, two methods were found to be most suitable. However, due to the undetermined period of time the slag will remain on site, no single method could be identified as "most" effective. This report describes each encapsulation option to facilitate a decision based upon cost, ease of application, effectiveness of encapsulation, and the effect upon the ultimate disposal or treatment of the slag.

1. Weather Resistant Tarpaulin

In spite of its simplicity, the placement of water repellent tarps over the slag piles would be quite effective against runoff and airborne releases from the slag. Obvious advantages to the use of tarps as a stabilizer are the ease of which they can be put in place and the inherent cost savings of reduced manpower requirements. A further advantage to the use of tarps is that they are readily removable if future treatment or disposal so dictates. The single foreseen drawback is the inevitable degradation of the tarp material. However, even periodic replacement of the tarps would not exceed costs generated by a more permanent method of encapsulation.

Estimated Cost of Material/Square Foot = $0.56
* Does not reflect installation labor costs

2. <u>Sodium Silicate Encapsulant</u> ("Water Glass")

Commonly used for the encapsulation of asbestos, sodium silicate can provide an almost permanent solution to stabilizing the slag piles at NL Industries. While there are a variety of sodium silicate compounds available, it has been recommended by a local manufacturer that "Asbestite 3000" be used in this particular situation. If applied to a thickness of 3/4 of an inch, "Asbestite 3000" will be more than sufficient in preventing runoff and airborne particles. Despite the excellent properties of this material the project cost will be quite high due to application costs and added disposal volume.

<u>Estimated Cost of Material/Square Foot = $0.59</u>
* Does not reflect application labor costs

Prior to the selection of the appropriate method of encapsulation, a determination must be made as to the expected length of time that the slag will remain on site prior to disposal. If there is no anticipated disposal for the material the increased labor costs in applying the sodium silicate may be justified. However, if disposal of the slag can be arranged in a relatively short period of time (~1 year), the high labor costs and increased volume of material requiring disposal must be a prime consideration.

1. BACKGROUND

NL Industries, in Pedricktown, NJ recycled lead from spent automotive batteries from 1972 to 1983. Their slag is burried in the on-site landfill. NSNJ purchased property in 198' and filed for bankruptcy in March 1984. A loose/dusty res ual slag contaminated with lead, iron and other heavy metal from the NSNJ smelting process was stock piled on site in outdoor bins.

There are four major slag piles on site. The approximate surface area of the slag piles are as follows: 33,000 ft^2; 7,100 ft^2; 8,000 ft^2 and 7,100 ft^2. The total volume of slag is approximated at 2,000 cubic yards.

2. ENCAPSULATION

Since the slag piles are exposed to the environment, in particular the wind and the rain, there existed a great threat of dispersal of the slag dust into the surrounding community. To mitigate this threat, it was decided to encapsulate the slag piles with a surface treatment marketed under the brand name Semi-Pave by Witco Corporation (Witco).

Semi-Pave is manufactured from heavy naphthenic oil resins. The surfacing agent is supplied as a cold water emulsion, enabling it to be diluted with water, hence improving the economics of its use. Witco suggested that it can be diluted to a ratio of 1:1 to 1:4 and be applied at a rate of 0.5 gallons/square yard. After application, the surface hardens to near pavement-like surface.

During the week of April 24, 1989, the small business contractor, S&D Engineering Services, Inc., Metuchen, NJ consisting of four personnel, began the encapsulation process.

The spraying operation entailed filling a 300 gallon holding tank with 165 gallons of water from a fire hydrant followed by the pumping of 55 gallons of Semi-Pave from a drum into the holding tank. This achieved a 1:3 dilution. Injection of air through a dip pipe to the bottom of the holding tank agetated the contents into a homogenous solution. Once this was completed, the actual spraying operations took place. The most time-consuming element in this operation was the pumping of the Semi-Pave into the holding tank due to its viscosity (18.6 cSt @ 40°C). It took the contractors personnel more than 45 minutes to prepare the Semi-Pave for spraying; the actual spraying took only about 15 minutes, at a rate of 0.5 gallons/square yard.

Due to the clogging of the transfer pump, S & D modified the drum emptying procedure. A PVC pipe was threaded into the drum bung hole and the drum was emptied with air pressure. This procedure significantly reduced the time taken to transfer the Semi-Pave from the drum to the holding tank.

On the last day of the spraying operation - April 27, 1989, it was evident that there would be five drums unused. EPA, the Technical Assistance Team (TAT), and the contractor decided to increase the concentration of Semi-Pave in the spraying solution to 1:2 for spraying the last slag pile utilizing three of the five drums. The remaining two drums were sprayed undiluted onto the previously treated slag pile.

It took approximately 120 man hours to spray the four slag piles totaling approximately 55,200 square feet. The 120 man-hours exclude the mobilizing, deconning and demobilizing time.

3. FUTURE RECOMMENDATIONS

A. The encapsulation operation allowed TAT to assess the encapsulation material at three different dilution ratios; 1:1, 1:2, and 1:3. In our opinion, the best dilution ratio is 1:2. The 1:3 dilution did not appear to provide an adequate encapsulation while the 1:1 mixture would be the least economical, considering that for the purpose intended, the 1:1 ratio does not significantly reduce the threat of airborne contaminants compared to the 1:2 ratio to justify its use.

B. It is suggested that instead of utilizing a drum pump or emptying the Semi-Pave drums under pressure, an eductor should be tried. The use of an eductor would almost eliminate the time consuming chore of preparing the Semi-Pave for spraying. The dilution and mixing could result as a single step in the eductor eliminating the potential of over pressuring and bursting of a drum.

A manufacturer of eductors - Schuttle & Koerting, PA (215) 639-0900. This manufacturer had numerous eductors in stock, one model in particular would appear to meet our needs, the model figure 264 Eductor size 1 inch would use 10 gpm of water @ 80 psig and a discharge pressure of 20 psig. For a 1:2 dilution, the spraying time of 55 gallons of stock Semi-Pave would be approximately 10 minutes. The cost of such a unit is about $100.00. This expense is more than justified when considering the fact that the man hours spent spraying could be reduced by as much as 50%.

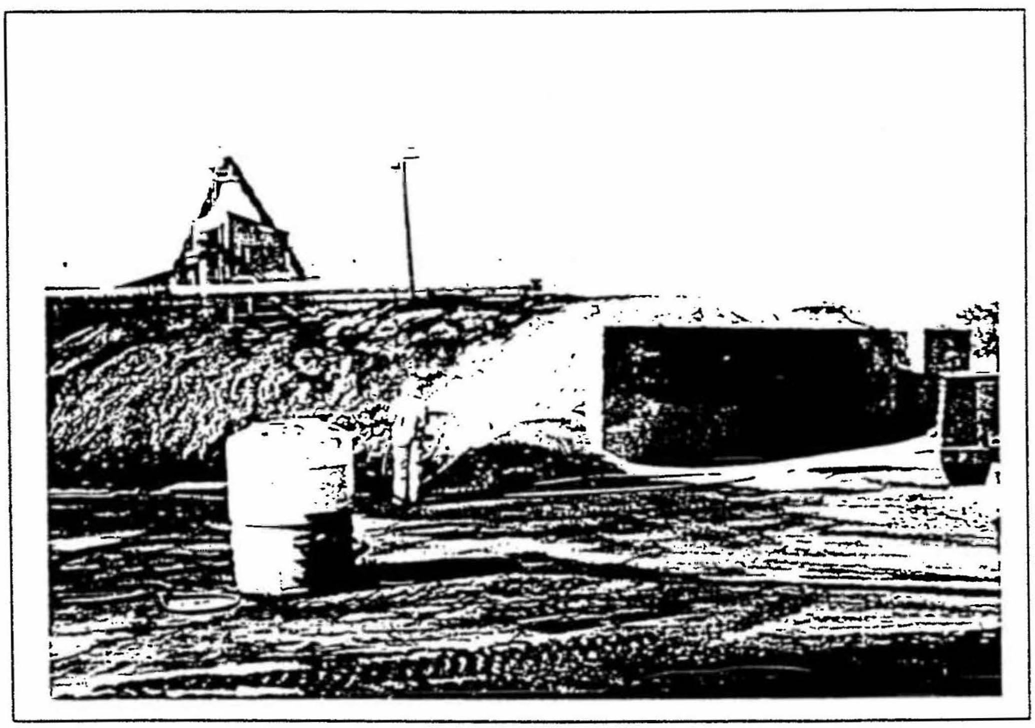
C. It is recommended that an appropriate solvent be used to decon equipment, since the dry Semi-Pave is not water soluble. At NL Industries, mineral spirits were used.

100984

EVALUATION OF THE ENCAPSULATION
OF SLAG PILES WITH SEMI-PAVE AT
NL INDUSTRIES, PEDRICKTOWN, NJ

Prepared by:
Dilshad J. Perera
Technical Assistance Team
Roy F. Weston, Inc.
Edison, New Jersey 08837

Date:
May 1989



1. BACKGROUND

The NL Industries facility in Pedricktown, NJ began recycling lead from spent automotive batteries in 1972. A loose/dusty residual slag contaminated with lead, iron and other heavy metals from the smelting process was stock piled on site in outdoor bins.

There are four major slag piles on site. The approximate surface area of the slag piles are as follows: 33,000 ft^2; 7,100 ft^2; 8,000 ft^2 and 7,100 ft^2. The total volume of slag is approximated at 2,000 cubic yards.

2. ENCAPSULATION

Since the slag piles are exposed to the environment, in particular the wind and the rain, there existed a great threat of dispersal of the slag dust into the surrounding community. To mitigate this threat, it was decided to encapsulate the slag piles with a surface treatment marketed under the brand name Semi-Pave by Witco Corporation (Witco).

Semi-Pave is manufactured from heavy naphthenic oil resins. The surfacing agent is supplied as a cold water emulsion, enabling it to be diluted with water, and hence improving the economics of its use. Witco suggested that it can be diluted from a ratio of 1:1 to 1:4. They also recommend that the Semi-Pave be applied at a rate of 0.5 gallons/square yard. Upon application, the surface treatment hardens to near pavement-like surface according to Witco.

During the week of April 24, 1989, the regional ERCS (S&D Engineering Services, Inc., Metuchen, NJ) contractor, consisting of four personnel, began the encapsulation process.

The spraying operation entailed filling a 300 gallon holding tank with 165 gallons of water from a fire hydrant followed by the pumping of 55 gallons of Semi-Pave from a drum into the holding tank. This achieved a 1:3 dilution. This was then followed by the injection of air through the bottom nozzle of the holding tank in order to form a homogenous solution. Once this was completed, the actual spraying operations took place. The most time-consuming element in this operation was the pumping of the Semi-Pave into the holding tank due to its viscosity (18.6 cSt @ 40°C). It took the regional ERCS personnel over 45 minutes to prepare the Semi-Pave for spraying; the actual spraying took only about 15 minutes, at a rate of 0.5 gallons/square yard.

Due to the clogging of the drain pump, regional ERCS modified the procedure by which they pumped out the Semi-Pave. A PVC pipe was threaded into the bung hole and the drum was pressurized with air to pump out the Semi-Pave. This new procedure significantly reduced the time taken to transfer the Semi-Pave from the drum to the holding tank.

On the last day of the spraying operation - April 27, 1989, it was evident that there would be five drums unused. EPA, the Technical Assistance Team (TAT), and the regional ERCS contractor decided to increase the concentration of Semi-Pave in the spraying solution to 1:2 for the spraying of the last slag pile utilizing three of the five drums. The remaining two drums were poured undiluted onto the previously treated slag pile.

It took approximately 120 man hours to spray the four slag piles totaling approximately 55,200 square feet. The 120 man-hours exclude the mobilizing, deconning and demobilizing time.

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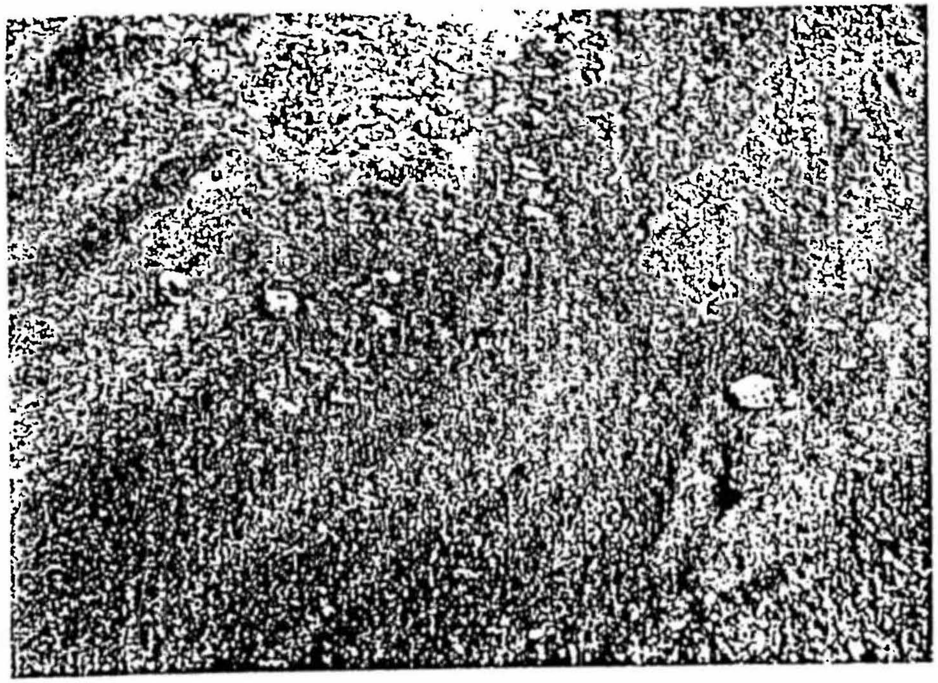
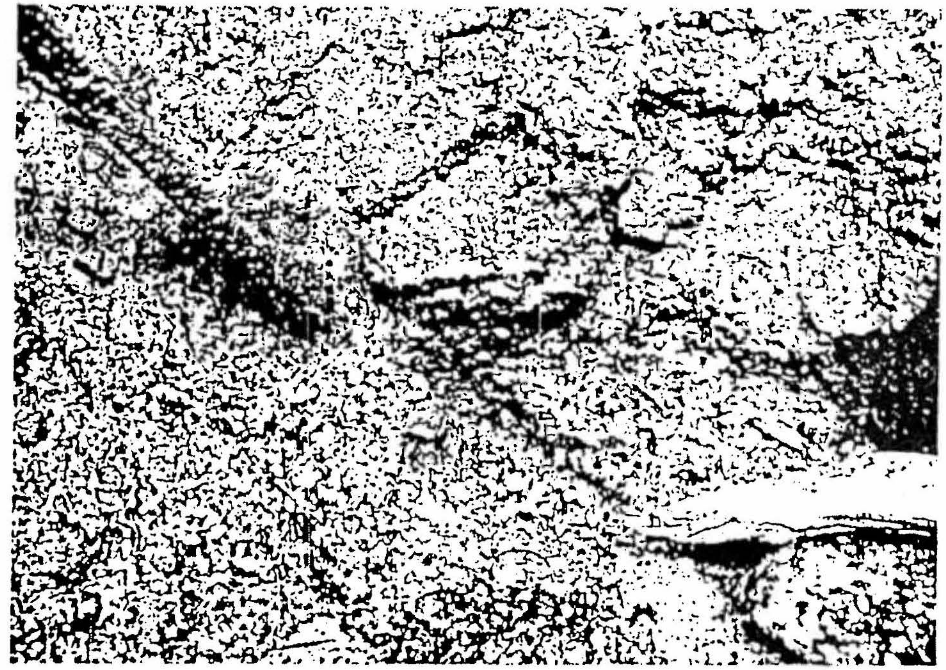
A. The encapsulation operation allowed TAT to assess the encapsulation material at three different dilution ratios; 1:1, 1:2, and 1:3. In our opinion, the best dilution ratio is 1:2. The 1:3 dilution did not appear to be a strong encapsulation and the 1:1 encapsulation would be far less economical considering that for the purpose intended, the 1:1 ratio does not significantly reduce the threat of airborne contaminants over the 1:2 ratio to justify its use.

B. It is TATs opinion that instead of utilizing a drum pump or pumping the Semi-Pave under pressure, an eductor should be used. The use of an eductor would almost eliminate the time consuming chore of preparing the Semi-Pave for spraying since the dilution and mixing would occur as a single step in the eductor. This would also eliminate concerns of over pressuring and exploding the system.

TAT contacted a manufacturer of eductors - Schuttle & Koerting, PA (215) 639-0900. This manufacturer had numerous eductors in stock, one model in particular would appear to meet our needs, the model figure 264 Eductor size 1 inch would use 10 gpm of water @ 80 psig and a discharge pressure of 20 psig. For a 1:2 dilution, the spraying time of 55 gallons of stock Semi-Pave would be approximately 10 minutes. The cost of such a unit is about $100.00. This expense is more than justified when considering the fact that the man hours spent spraying could be reduced by as much as 50%.

C. It is recommended that an appropriate solvent be used to decon equipment, since the dry material cannot be washed with water. At NL Industries, mineral spirits were used.

D. TAT recommends that periodic site visits be made to assess the durability of the encapsulation over a period of time and varying environmental conditions.

Before and after treatment. The photograph on the left is an area as yet untreated. The photograph on the right depicts the appearance after treatment.

Site Name: NL Industries, Pedricktown, NJ
Photograph Taken By: Dilshad Perera
Witnessed By: Jeff Bechtel
Date: April 25, 1989

100288

PRELIMINARY

file copy

Health Assessment for

100289

N. L. INDUSTRIES

PEDRICKTOWN, SALEM COUNTY, NEW JERSEY

02NJD061843249

Agency for Toxic Substances and Disease Registry
U.S. Public Health Service

APR 10 1989

THE ATSDR HEALTH ASSESSMENT: A NOTE OF EXPLANATION

Section 104(i)(7)(A) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, states "...the term 'health assessment' shall include preliminary assessments of potential risks to human health posed by individual sites and facilities, based on such factors as the nature and extent of contamination, the existence of potential pathways of human exposure (including ground or surface water contamination, air emissions, and food chain contamination), the size and potential susceptibility of the community within the likely pathways of exposure, the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified hazardous substances and any available recommended exposure or tolerance limits for such hazardous substances, and the comparison of existing morbidity and mortality data on diseases that may be associated with the observed levels of exposure. The Administrator of ATSDR shall use appropriate data, risk assessments, risk evaluations and studies available from the Administrator of EPA."

In accordance with the CERCLA section cited, ATSDR has conducted this preliminary health assessment on the data in the site summary form. Additional health assessments may be conducted for this site as more information becomes available to ATSDR.

PRELIMINARY HEALTH ASSESSMENT
N. L. INDUSTRIES, INC.
PEDRICKTOWN, NEW JERSEY

Prepared by:
Office of Health Assessment
Agency for Toxic Substances and Disease Registry (ATSDR)

Background

The N.L. Industries, Inc. Site (NLI) is listed by the U.S. Environmental Protection Agency on the National Priorities List. The 46-acre site is located in Pedricktown (Salem County), New Jersey. The site is a former secondary lead smelting facility which operated from 1972 to 1984. In addition, a closed landfill exists on-site that contains process wastes (slag and rubber materials) from the plant and lead contaminated soils that were excavated from the facility grounds. Improper storage and processing of batteries and wastes on-site has been implicated to be contributing to on-site contamination. Access to the site is restricted. Removal operations consist of restricting access and capping the on-site slag piles.

The following documents were reviewed by ATSDR: (1) Remedial Investigation/Feasibility Study Workplan, May 1987, (2) Site Inspection Report, 1982, and (3) The Hazard Ranking System Package, August, 1983. These documents form the basis of this Preliminary Health Assessment.

Environmental Contamination and Physical Hazards

Preliminary on-site sampling results have identified lead (36 to 83,600 ppm in soil, 7.5 ppm in surface water, 0.01 to 11 ppm in groundwater). In addition, arsenic and cadmium was identified along with selenium (1 ppm) were identified in on-site groundwater. Arsenic and cadmium were reported "to be at concentrations that exceed standards." No further on-site sampling was reported. Moreover, off-site sampling information was reported by New Jersey Department of Environmental Protection (NJDEP) from 1979 to 1981. Physical hazards were not reported.

Potential Environmental and Human Exposure Pathways

Potential environmental pathways include those related to contaminated groundwater, surface water, on-site soils, and entrainment of contaminants in ambient air. In addition, bioaccumulation of contaminants in fish, waterfowl, livestock, and commercial agricultural products may be another environmental pathway.

Potential human exposures to contaminants include ingestion and direct contact with groundwater, surface water, soil, and possible ingestion of bioaccumulated contaminants in the food chain. In addition, inhalation of contaminants entrained in air is another potential source for human exposure.

Demographics

NLI is located in a rural area. There are about 2,500 people living within a 3-mile radius of the site. The distance from NLI to the nearest residence is approximately 200 feet.

Evaluation and Discussion

Private and municipal wells exist within the vicinity of the site. There are 8 to 10 private wells used for potable purposes. It was reported that past sampling results of area private wells were questionable. These wells are currently being retested and sampling results are pending. Municipal wells have been reported to be used for domestic purposes. Sampling of private wells in the vicinity by NJDEP in 1986 and 1987 showed no contamination.

A stream exists along the western boundary of the site. Another stream exists near the eastern site boundary. An "marshy" area surface water sample (1983) identified lead (7.5 ppm). No current sampling information has been reported.

On-site soil is contaminated with lead which has been confirmed from sampling. However, the most recent sampling information reported occurred in 1981. Current sampling information is necessary to adequately determine the possible public health implications of NLI. Off-site soil contamination has been confirmed.

Presently, the lead smelting operation ceased in January 1987. Air sampling measurements of lead were conducted (1979 to 1982) while the plant was in operation. Sampling results of lead were reported "and revealed high levels of lead in the air." Further air sampling measurements regarding the release of volatiles or gases has not been performed.

Food chain information was reported not to be available. ATSDR has prepared a Toxicological Profile on lead.

Conclusions and Recommendations

Based on available information, this site is considered to be of potential public health concern because of the risk to human health caused by the possibility of human exposure to hazardous substances. Direct contact and incidental ingestion of contaminated soil and surface water by area residents is the most likely route of exposure. In addition, ingestion and direct contact with contaminated groundwater possibly by area residents may be another exposure route.

Additional information on contaminants released, populations potentially exposed, and environmental pathways through which the contaminants can reach these populations is necessary. At a minimum, future investigations of this site should include a characterization of the site and site contaminants to include current sampling information, and a characterization of the hydrogeology of the area.

Further environmental characterization and sampling of the site and impacted off-site areas during the Remedial Investigation and Feasibility Study (RI/FS) should be designed to address the environmental and human exposure pathways discussed above. When additional information and data, such as the completed RI/FS, are available, such material will form the basis for further assessment by ATSDR, as warranted by site-specific public health issues.

100294 7-1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

1001E00611.14

DATE: JUL 1 1988

SUBJECT: NL Industries, Inc. Site
Removal Action Assessment

FROM: John V. Czapor, Chief
Site Compliance Branch

TO: George Zachos, Acting Chief
Response and Prevention Branch

Recently at my request, the Response and Prevention Branch evaluated the NL Indsutries Site for a Removal Action. In a memorandum to me from Bruce Sprague dated June 1, 1988, it was indicated that the conditions at the site did not meet the criteria for a removal action. Based on new information from local residents which my staff recently received, I request that you reevaluate the site.

On June 29, 1988, in a public meeting during which EPA presented the scope of the RI/FS for the site, local residents presented the following information:

1. The site is not completely fenced and there are documented reports of trespassing by juvenilles. The unfenced portions include the northern and western areas of the site.

2. The residential wells have not been sampled in the last one to two years. As a result of previous testing of residential drinking water of at least one well, the resident was advised not to drink the water.

3. Certain areas along the site perimeter are overgrown with tall grasses and other vegetation. Some of these areas are being used for dumping large household trash items. The residents are concerned that the tall vegetation may increase the threat of fire.

My staff advised the residents that EPA would investigate and consider each of the above items in the very near future. I believe that it is especially important that EPA samples the homes (about 10 to 20) that are in close proximity of the site as soon as possible. As my staff has discussed with you, perhaps the Technical Assistance Team can be used for this effort.

Please contact Kerwin Donato of my staff at FTS 264-5397 for additional information. Thank you very much for your assistance.

cc: K. Donato, ERRD-SCB
D. Harrington, ERRD-RP
D. Salkie, ERRD-DD
S. Luftig, ERRD

Otto / Keiwen
Let's Discuss
TK

Let's protect our earth

100293

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

Michele M. Putnam
Deputy Director
Hazardous Waste Operations

John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625
(609)633-1408

Lance R. Miller
Deputy Director
Responsible Party Remedial Action

John V. Czapor, Chief
Site Investigation & Compliance Branch
USEPA Region II
26 Federal Plaza
New York, New York 10278

21 JUN 1988

Dear Mr. Czapor:

Re: Use of Escrow Funds for Removal of Materials at
NL/NSNJ Site Oldmans Township, Salem County

We have received the enclosed correspondence dated June 3, 1988 from Assemblyman Jack Collins regarding the use of escrow funds for removal of materials at the above site. His correspondence is in response to an inquiry dated May 6, 1988, copy enclosed, from Edward Rosinski of the Oldmans Planning Board.

Earlier, on April 12, 1988, we had provided an accounting of the escrow funds to the Oldmans Township Solicitor John Jordan in accordance with his request dated March 21, 1988. As the EPA is the lead agency for this site we feel it appropriate that your agency respond to the question of using the escrow fund for the removal of materials at the site. We had notified you in our earlier correspondence that this money can be made available for EPA's use to conduct a removal action.

Enclosed are copies of correspondence between this department, Mr. Jordan and your office pertaining to this matter. If you have any questions please do not hesitate to contact me or Steven Weber of my staff at (609) 633-0701.

Sincerely,

Melinda Dower

Melinda Dower, Chief
Bureau of Case Management South

SW/jmh
Enclosures

c Jack Collins, Assemblyman, 3rd District
Edward J. Rosinski, Chairman, Oldmans Planning Board
Rick Engel, DAG
Mark McQuerrey, ORS

100296

RECEIVED
MAY -9 1988

RECEIVED
- 8 1988

May 6,1988

Honorable Jack Collins
63 East Ave
Woodstown, N.J.
08098

Attn: Jack Collins

RE: NL-NS Site Oldmans

Dear Jack:

We finally ,after nine months, received a full accounting of the $ 600,000 NL payed DEP in 1983 to monitor and correct all problems at the NL site.

You can see the funds available for the site have increased to $ 1,070,906.

How can we get them to spend that money to clean up the site while the RI-FS studies are in progress. It's sad when an agency has received funds for a specific purpose and refuses to function. There should be a way to compell DEP to act. Action now would save considerable increased cost later when the contamination spreads.

Sincerely,

Edward J. Rosinski

Edward J. Rosinski, Chairman
Oldmans Planning Board

100297

Let's protect our earth

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT

Michele M. Putnam
Deputy Director
Hazardous Waste Operations

John J. Trela, Ph.D., Director
401 East State St.
CN 028
Trenton, N.J. 08625
(609)633-1408

Lance R. Miller
Deputy Director
Responsible Party Remedial Action

Jonh D. Jordan, Solicitor, Oldmans Township
111-113 North Broadway
Pennsville, New Jersey 08070

12 APR 1988

Re: NL Industries / National Smelting Site
Oldmans Township, New Jersey

Dear Mr. Jordan:

In response to your March 21, 1988 correspondence, I have provided below an accounting of the $600,000 NL Industries (NL) gave to NJDEP as a condition of the February 1983 Amended Administrative Consent Order:

	Cost
Confirmatory Analyses of samples from eight wells by ETC Lab. Samples taken in May, 1987	$ 3,465.00
Confirmatory Analyses of samples from eight wells by H_2M Corp. Samples taken in October, 1986	$ 3,381.00
Analyses of samples from nine wells by IT Corp. Samples taken in January, 1986	$ 22,248.00
Total amount expended as of March 31, 1988	$ 29,094.00
Total amount remaining in the account as of March 31, 1988	$1,070,906.00

The second and third issues in your March 21, 1988 correspondence concerning the Field Sampling Plan and information about the bankruptcy proceedings will be responded to by Mr. Kerwin Donato, Project Manager, USEPA.

Should you have any questions, please do not hesitate to call me at (609) 633-0701.

Sincerely,

Dhruva G. Kanjarpane, P.E.

Dhruva G. Kanjarpane, P.E.
Case Manager
Bureau of Case Management

DGK/ch
cc: Kerwin Donato, USEPA
Art Esposito, BFSO
Rick Engel, DAG
Mark McQuerrey, ORS

JORDAN AND JORDAN
ATTORNEYS AT LAW
111-113 NORTH BROADWAY
PENNSVILLE, NEW JERSEY 08070

JOHN D. JORDAN
LOIS L. JORDAN

TELEPHONE
(609) 678-3370

APR - 5 198?

March 21, 1988

State of New Jersey
Department of Environmental Protection
Division of Hazardous Waste Management
Attn: Kara Levinson, Case Manager
401 East State Street
CN 028
Trenton, NJ 08625

Re: NL Industries/National Smelting Site
Oldmans Township, New Jersey

Dear Ms. Levinson:

I am writing to you in hopes of obtaining the additional information which was promised in your letter to me of November 20, 1987. In particular, I have not as yet received a response from the Fiscal Integrity Unit as to the $600,000.00 posted under the Administrative Consent Order between the DEP and NL Industries. Please refer to paragraph 1 of your letter to me.

The second issue concerns the Field Sampling Plan which was to be received in January, 1988. In your letter, you indicated that once the Site Operations Plan was approved, the Township would receive a copy of the Field Sampling Plan. Is this document now available? Please advise.

The third issue concerns any information which you or the EPA may have derived with respect to the bankruptcy proceedings. I have had no information on this matter and would like to be brought up to date.

I hope to hear from you at your earliest convenience.

Very truly yours,

John D. Jordan, Solicitor
Oldmans Township

JDJ/mss
cc: Oldmans Township Committee
United States Environmental Protection Agency
Attn: Kerwin Donato
Edward J. Rosinski

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

200001

REGION II

JACOB K. JAVITS FEDERAL BUILDING

NEW YORK, NEW YORK 10278-0012

ACTION MEMORANDUM

DATE: JUL 14 1993

SUBJECT: Request for a Ceiling Increase and a Removal Action Restart at the National Lead Industries Inc. Site, Pedricktown, Salem County, New Jersey

FROM: Eugene Dominach, On-Scene Coordinator
Removal Action Branch - Section A

TO: William J. Muszynski, P.E.
Acting Regional Administrator

THRU: George Pavlou, Acting Director
Emergency and Remedial Response Division

Site ID-#: 61

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the removal action and ceiling increase described herein for the NL Industries, Inc. (NL) Site (Site) located in Pedricktown, Oldmans Township, Salem County, New Jersey. The NL Site is included on the National Priorities List (NPL) and continues to meet the criteria for a removal action under the Comprehensive Environmental Response, Compensation and Liability Act, as amended (CERCLA), as described in Section 300.415 of the National Contingency Plan (NCP). The proposed removal action is estimated to cost $1,237,700, of which $934,100 is from the Regional removal allowance. The new total project ceiling will be $1,980,900.

II. SITE CONDITIONS AND BACKGROUND

The Salem County Mosquito Commission (SCMC) has proposed to widen and deepen a portion of the West Stream that crosses the NL Site to alleviate flooding and improve drainage in areas upstream of the Site. However, analytical data generated during the Remedial Investigation/Feasibility Study (RI/FS) indicated that sediments in the stream contain lead at levels up to 26,800 parts per million (ppm). The elevated levels of lead in the soil and stream sediments are the result of the smelting, handling and storage activities conducted at the NL Site. Due to the critical nature of the contaminated soil and stream sediments and the local flood control problem, the proposed action has been referred to the Removal Action Branch (RAB) for consideration. Action is also needed to prevent further spreading of contamination and to ensure proper disposal of excavated materials. The funding requested in this memorandum is necessary for the excavation, testing, staging and proper disposal of the contaminated soil and sediments. The contaminated soil and stream sediments are to be removed to a depth of one foot and the stream width increased to fourteen feet. The total quantity of material to be excavated is approximately 1,700 cubic yards, based on data previously collected at the site. Figures 1 and 2 show the general Site location and layout. Figure 3 shows the planned area of work, which extends from the south side of Pedricktown Road to the north side of Route #130, a length of approximately 3,300 feet.

The category of this removal action is time-critical and the Comprehensive Environmental Response, Compensation and Liability Information System number for this Site is NJD061843249.

A. Site Description

1. Removal site evaluation

The NL Industries Site is an abandoned, secondary lead smelting facility. In 1972, the NL facility began operations by reclaiming and recycling lead from automotive batteries. Residual materials and the slag produced from the smelting process were disposed in the on-site landfill. During its period of operation, NL was cited by the New Jersey Department of Environmental Protection and Energy (NJDEPE) with various and repeated violations of the state air and water regulations. In 1983, NL sold the facility to National Smelting of New Jersey, Inc. (NSNJ).

In 1984, NSNJ ceased operations and declared bankruptcy. Remaining on-site when operations terminated were four slag piles having an estimated volume of approximately 9,800 cubic yards, 4,000 cubic yards of contaminated debris, 25 tons of hazardous materials stored in the warehouse and approximately 900 cubic yards of lead bearing raw materials in drums and containers in various locations throughout the Site. The containers, due to exposure to the elements, age and corrosion, posed a threat of release to the environment.

The County of Salem has proposed a flood control project for the West Stream to ease flooding conditions to residences and farmlands upstream of the Site. The project will involve the removal of sediment and widening of the stream. During the RI, stream sediments were sampled and analyzed in 1988, 1989 and 1990. The mean concentration for lead in the West stream was reported as 1,340 ppm and the maximum concentration was 26,800 ppm adjacent to the plant area. Due to the elevated levels of lead in the stream sediment, the proposed project for the West Stream cannot be safely undertaken by the County. The scope of the proposed stream widening project is shown in Figures 3 and 4.

2. Physical location

The NL site is located on Penns Grove-Pedricktown Road in Pedricktown, Salem County, New Jersey. The 46-acre site, which overlies the Cape May aquifer, is bordered by two small intermittent streams, which are tributaries to the Delaware River. The West Stream receives surface runoff from the site. The Delaware River is approximately 1.5 miles north of the site. The site location map is shown in Figure 1.

The NL facility is situated within an industrial park that includes B.F. Goodrich, Martin Propane Gas Service, Pioneer Pallet, Exxon (inactive), and The Corrosion Control Co. A Conrail easement bisects the property, separating a closed NJDEPE permitted landfill to the north from the former smelting operations area to the south.

3. Site characteristics

The NL site is an abandoned lead reclamation facility that operated from 1972 through 1984, recycling lead from automobile and industrial batteries, and from lead bearing materials. The site map is shown in Figure 2.

During the facility's operational history, NL Industries was cited by the NJDEPE on numerous occasions for violations of State air and water quality standards. As a result of the enforcement actions, NL Industries modified their process to comply with NJDEPE regulations. NL Industries sold the facility to National Smelting of New Jersey (NSNJ) in 1983. NSNJ operated the facility from 1983 to 1984, when operations were ceased before NSNJ filed for bankruptcy. The facility has been vacant since 1984. NL Industries entered into an AOC with EPA to conduct a Remedial Investigation/Feasibility Study (RI/FS), effective on April 30, 1986.

The RI report for Operable Unit One of the site was approved on July 8, 1991 and the Final FS report was submitted to EPA in May 1993.

In September 1991, EPA issued a Record of Decision (ROD) for Operable Unit Two of the Site, which addressed contaminant sources within the paved industrial area. These sources included the slag and lead oxide piles, contaminated debris, contaminated surfaces (including buildings), and contaminated standing water. The selected remedy included on-site stabilization and disposal of the slag piles, decontamination of contaminated surfaces, off-site treatment and disposal of contaminated standing water, and recycling of recyclable material (including the lead oxide piles and scrap metal).

In March 1992, EPA issued a Unilateral Administrative Order to 31 Potentially Responsible Parties (PRPs) requiring them to implement the selected remedy for Operable Unit Two. At the same time, EPA issued an Explanation of Significant Differences, which allowed the treated slag to be disposed of off site. Remedial activities for Operable Unit Two of the site are expected to be completed during September of 1993. During the remediation, the PRPs have chosen to demolish and remove the on-site buildings after they have been decontaminated.

The proposed site activity is a restart and the fifth removal action since the Removal Action Branch's initial involvement at the site. Details relating to the previous removal actions at the site are contained in Section II.B of this Action Memorandum.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

The NL site is characterized by the presence of highly toxic metals. The heavy metals identified in the stream sediments at the site include: Antimony, arsenic, cadmium, chromium, copper, lead and zinc. Each of these are designated hazardous substances under Section 101(14) of CERCLA as listed in CFR Table 302.4. Routes of exposure are inhalation, ingestion and skin or eye contact. Figure 5 of Appendix A is a Toxic Effects chart of the metals found on-site.

Concentrations of lead in excess of 500 ppm, found in the stream sediments are the result of the smelting, storage and disposal activities conducted at the NL site. The total quantity of material to be excavated is approximately 1,700 cubic yards, based on the current data.

Flooding and subsequent erosion could potentially accelerate the release of heavy metal contaminated sediments. Overflow of the streams banks could deposit lead contaminated sediments on adjacent properties. Flooding of the stream could transport contaminated sediments farther downstream, affecting the water quality of the Delaware River. Dried sediment could become airborne and expose humans and environmental receptors to lead bearing dust.

5. **National Priority List status**

This site was placed on National Priorities List in December 1982, and is currently ranked number 135. A Remedial Action addressing surface waste, under Operable Unit Two, has been on-going since November 1992.

6. **Maps, pictures and other graphic representations**

The Site location map (Figure 1), a Site map (Figure 2), stream widening project maps (Figures 3 and 4) and a Toxic Effects chart (Figure 5) are included in Appendix A.

B. Other Actions to Date

1. **Previous actions**

To date, only government and private actions have been undertaken at the Site. The EPA has completed four removal actions at the Site. A brief description of each is provided below.

Phase I - On December 19, 1988, funding was approved to conduct a removal action at the Site, consisting of repairs to the existing fence, installation of 900 feet of new chain link fence, the posting of warning signs and the temporary encapsulation of the slag piles to minimize airborne releases from the Site. The project was completed on May 31, 1989, at a cost of $77,555.

The newly installed section of fence isolated the facility from the landfill, but was not fully effective in limiting access as several break-ins were reported. The slag encapsulant degraded over time.

Phase II - Phase II was initiated on October 11, 1989 and consisted of inventorying the on-site hazardous and recyclable materials stored in deteriorating containers; upgrading building security, including the installation of fence gates and locks on all building entrances; re-encapsulating the slag piles to prevent the release of airborne particulates; constructing sand berms around the perimeter of the slag piles to prevent runoff from the site caused by adverse weather conditions; recycling of 22 tons of raw materials stored on-site; and off-site disposal of two tons of hazardous waste.

In April 1990, after partial failure of the slag encapsulant had occurred and potential release of the slag became imminent, the slag pile retaining bin walls were reinforced with timber. The reinforcement was designed to provide temporary support to prevent total collapse of the bin retaining walls and release of the slag to the environment.

This phase was completed on September 20, 1990 at a cost of $376,010, of which $227,660 was expended for mitigation contracting.

Phase III - A removal action to remove five tons of copper wire was initiated on November 17, 1990 to curtail the entry of unauthorized persons who wished to remove the wire.

Other activities performed in Phase III were the transferring and relocation of the contents of exterior stored steel and fiber drums that contained lead bearing waste to dry and sheltered on-site storage areas and the recycling of 2,200 steel drums. Relocation of the contaminated waste from the deteriorating containers was necessary to eliminate future discharges into the environment via airborne particulates and surface runoff.

Phase III was completed on July 25, 1991 at a cost of $186,720, of which $135,280 was for mitigation contracting.

Phase IV - Phase IV was initiated on June 18, 1992 and consisted of the replacement of damaged wood shoring to two slag bin retaining walls, the repair of the perimeter fence and building gates damaged by vandals and the upgrading of the slag pile berms to control runoff.

Phase IV was completed on June 26, 1992, at a cost of $45,715, of which $44,155 was for mitigation contracting.

2. Current actions

An RI was completed in July 1991 and an Final FS Report was submitted to EPA in May 1993. At this time, the PRPs are on-site and have completed the treatment and disposal of all slag. The lead oxide piles and large amounts of debris have been removed and recycled. Several hundred thousand gallons of contaminated standing water have been sent off site for treatment and disposal. The decontamination and demolition of the buildings is continuing and is expected to be completed during September 1993. After all buildings and debris have been removed, the paved area of the site will be regraded to prevent further accumulation of water.

Excavation of the contaminated stream sediments may be initiated at this time. Lead contaminated runoff from the slag piles is no longer available to contribute to the contamination of the stream. Upon EPA request, the SCMC will provide an access road for the length of the stream widening project by removing all surface vegetation. The SCMC will then stake out the boundaries of the area they intend to excavate for the widened West Stream, prior to initiation of EPA's removal activity.

C. State and Local Authorities' Roles

1. State and local actions to date

In 1986, the NJDEPE Division of Hazardous Waste Management transferred Site responsibility to the EPA to initiate safety measures as part of a long-term CERCLA Site cleanup. The State contended that the unguarded Site was a public health threat due a threat to the environment. The Site was subject to vandalism, trespassing, and following heavy rains, leachate from the lead-bearing material overflowed to the surrounding soil and groundwater. 200007

2. **Potential or continued State/local response**

EPA has completed a ROD for Operable Unit Two of the site. Notice letters have been issued to 56 companies identified as PRPs. The NJDEPE has concurred with the remedy selected in the ROD. EPA has coordinated major aspects of site remediation with the NJDEPE.

III. THREAT TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

The following criteria from Section 300.415(b)(2) of the NCP are directly applicable to the threats that exist at the NL Site:

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, or pollutants, or contaminants;

(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems;

(iv) High levels of hazardous substances, or pollutants, or contaminants in soils largely at or near the surface that may migrate;

(v) Weather conditions that may cause hazardous substances, or pollutants, or contaminants to migrate or be released; and

(vii) The lack of availability of other appropriate federal or state response mechanisms to respond to a release.

A. Threats to Public Health and Welfare

The Agency for Toxic Substances and Disease Registry (ATSDR) Health Assessment for the Site confirms that possible human and animal exposures include: ingestion, direct contact with groundwater/surface water and soil, possible ingestion of bioaccumulated contaminants in the food chain and inhalation of entrained contaminants. (See Toxic Effects Chart, Figure 5.) Concentrations of lead found in the West Stream greatly exceed EPA's recommended soil cleanup range of 500-1,000 ppm (OSWER Directive #9355.4-02 "Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites").

Several conditions of the stream increase the above mentioned risks. The buildup of sediment in the stream prevents proper drainage and causes flooding. Flooding could carry contaminated sediments, spreading contamination and possibly increasing the risk of exposure. The stream flow is intermittent in the upper sections during dry periods. Therefore, humans and animals could potentially be exposed to dried contaminated sediment for extended periods of time.

B. Threats to the Environment

The surface water in the West Stream contains lead in excess of EPA's Ambient Surface Water Quality Criteria for freshwater streams. Contaminated sediments contribute to poor surface water quality in the West Stream.

An ecological risk assessment was conducted during 1992 at the site by EPA's Environmental Response Team. It included a study of contaminant uptake by ecological receptors located at the site, as well as bioaccumulation modeling of contaminant uptake by higher organisms. The results of the ecological study and risk assessment were used in developing remedial action objectives.

The results of the ecological risk assessment indicate that a clean-up level of 500 ppm for site soils and sediments is appropriate to address the risks to ecological receptors.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The proposed scope of work by EPA for this project includes the excavation of contaminated sediment and soil to a depth of 1 foot by 14 feet in width by 3,300 feet in length. The estimated volume of soil slated for removal is based on RI/FS sampling data which indicates that the levels of lead are generally below 500 ppm at the 1 foot level. Upon completion of the removal action, the SCMC will complete the stream enhancement by removing an additional 3 feet by 14 feet of soil. The project start is based on clearing of vegetation by the county to provide an access route to the stream, and staking the new route of the widened stream.

The project has been divided into three sections based on location. These sections are described below. Excavation in each section will be handled in a similar manner, in approximately 100 foot or less increments, based on stream

During a no-flow condition, excavation could proceed without restraint and a dry stream bed would not require diversion equipment. Therefore, the optimal time to perform the removal action is during August and September.

During a flow condition, provisions for sand-bag damming, sheet piling and diversion pumping methods will become necessary and varied equipment will be provided for.

a. **Excavation of Section 1**--will proceed in a northerly direction for a distance of 250 feet to the culvert at the south side of Pedricktown Road. Should a flow condition exist, water will be pumped and diverted in 100 foot sections as the excavation progresses. To block water, sandbags will be placed in the stream at the beginning and at the end of a 100 foot section. If necessary, steel pilings will be placed behind the sandbags for support and to minimize leakage. Water will be pumped around the excavation area. See Figure 3 for a schematic of the proposed pumping scheme for this and all sections.

b. **Excavation of Section 2**--will begin at the north side of Pedricktown Road and continue to the south side of the Conrail Railroad tracks. Should a flow condition exist, the stream will be dammed and the water pumped and diverted in 100 foot sections as per Section 1, described above. When the excavation reaches the rail road tracks, the south side of the culvert under the tracks will be sandbagged and the water pumped to the north side of the RR tracks. No provision is being made to increase the diameter of the culvert under the railroad tracks.

c. **Excavation of Section 3**-- will begin on the north side of the rail road tracks and continue north to Route #130. Should a flow condition exist, the stream will be dammed and the water pumped and diverted in 100 foot sections as per procedures outlined in the above sections.

Staging areas for stockpiling the excavated soil will be provided for along the stream access road. The soil will be staged and bermed on geotech fabric to prevent sediment leachate runoff. To prevent rain infiltration, the soil will be covered at night with visqueen and to facilitate drying, uncovered and turned over during the day, to allow for evaporation of water. The soil will be sampled and analyzed for TCLP-lead, and shipped for disposal to a facility in compliance with the Resource Conservation and Recovery Act (RCRA). Should analysis reveal that the soil cannot be landfilled without treatment (i.e. stabilization), the soil may be covered and remain on-site until the entire excavation has been completed and a proper treatment technology is prepared.

lead above 500 ppm exist in the stream sediment. Therefore, TCLP-metals analysis of the excavated sediment and soil is required to ensure proper disposal of the materials. After excavation, sampling and analyses will be conducted to verify that the cleanup level has been achieved in the sediments remaining in the West Stream.

2. Contribution to remedial performance

The implementation of this removal action will permanently eliminate the threat to health, or welfare, or the environment posed by the contaminants in the stream's soils and sediments.

3. Description of alternative technologies

Analytical data, implementability of alternative technologies, effectiveness and cost will be considered in evaluating treatment technologies. The possible alternative technologies include stabilization, solidification and soil washing/flushing. If after investigation it is determined that a alternative technology is not economically justifiable, the soil will be landfilled.

4. EE/CA

Since the proposed removal action is time-critical, this section is not applicable.

5. Applicable or relevant and appropriate requirements (ARARS)

Federal ARARs determined to be practicable for the Site are the Clean Water Act, RCRA and the Occupational Safety and Health Act. EPA will meet the ARARs associated with the scope of work of this removal action to the maximum extent achievable.

6. Project schedule

The removal activities proposed for the NL facility can be implemented within two weeks following approval of the Action Memorandum and construction of the access road by the County. The excavation, staging and disposal of the stream sediments is expected to be completed in 40 working days. Additional time will be required to complete the program should scheduling conflicts be encountered with removal constraints or unfavorable weather conditions.

B. Estimated Costs

Extramural costs:

Regional Allowance Costs:

Total Cleanup Contractor Cost (Including 20% contingency, Rounded)	$ 934,100

Other Extramural Cost Not Funded From the Regional Allowance:

Total TAT, including multiplier cost	$ 74,500
Subtotal, Extramural Costs (Rounded)	$1,008,600
Extramural Cost Contingency (15%)	$ 151,300
TOTAL, EXTRAMURAL COSTS (Rounded)	$1,159,900

Intramural Costs:

Intramural Direct Cost	$ 56,700
Intramural Indirect Cost	$ 21,100
TOTAL, INTRAMURAL COSTS	$ 77,800
TOTAL, PROJECT CEILING (Rounded)	**$1,237,700**

NEW PROJECT CEILING

	Phases I-IV Authorized Ceiling	Phase V Estimated Budget	Project Ceiling
ERCS	$ 491,400	$ 934,100	$1,425,500
TAT	$ 113,490	$ 74,500	$ 187,990
Cont.	$ 3,510	$ 151,300	$ 154,810
EPA	$ 134,800	$ 77,800	$ 212,600
TOTAL	$ 743,200	$1,237,700	$1,980,900

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will increase the health risk to persons and biota coming in contact with the Site's contaminated soils, sediments or runoff.

At the present time there are no outstanding policy issues.

VIII. ENFORCEMENT

EPA has issued notice letters to 56 PRPs notifying them of their potential CERCLA liabilities. However, due to the time-critical nature of this request, a prompt removal activity is necessary to protect the public health and the environment.

IX. RECOMMENDATION

This decision document represents the selected removal action for the NL Industries Site in Pedricktown, New Jersey, developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP Section 30.415(b)(2) criteria for a removal and I recommend your approval for the proposed removal action. The new total project ceiling, if approved, will be $1,980,900, of which $1,425,500 is for mitigation contracting. This request represents an increase of $1,237,700, of which $934,100 is for mitigation contracting. Sufficient funding is available in our current Advice of Allowance to finance this phase of the removal action.

Please indicate your approval and authorization of funding, per current delegation(s) of authority by signing below.

APPROVAL: Kathleen C. Callahan **DATE:** 7/15/93
for William J. Muszynski, P.E.
Acting Regional Administrator

DISAPPROVAL: ______________________ **DATE:** ____________
William J. Muszynski, P.E.
Acting Regional Administrator

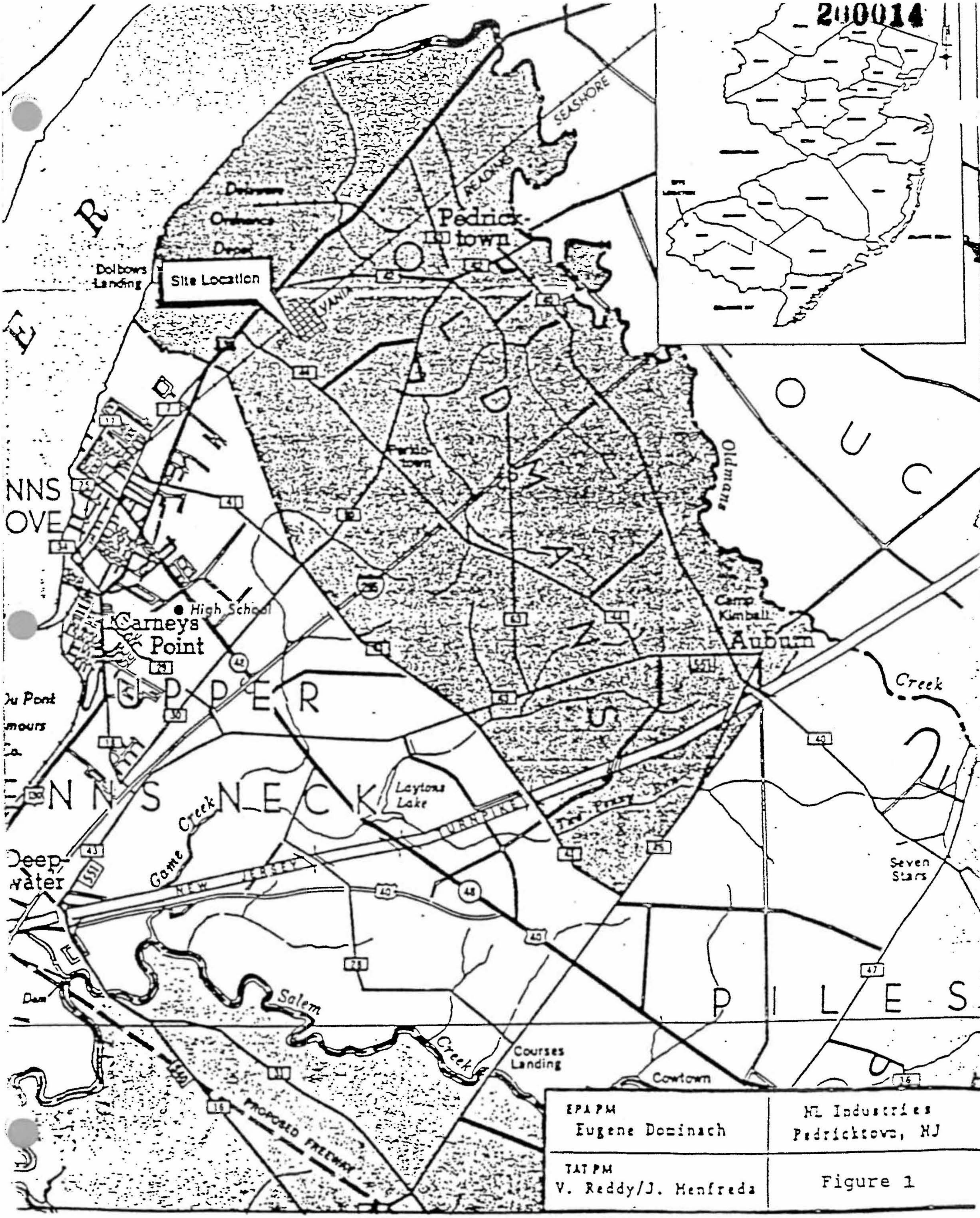
cc: (after approval is obtained)

K. Callahan, DRA
R. Salkie, ERRD-ADREPP
G. Zachos, ERRD-RAB
J. Marshall, EPD
P. Cutts OPM-FAM
D. Dietrich, 5202G
L. Miller, NJDEPE
D. Triggs, NJDEPE
C. Kelley, TATL
M. Gilbert, ERRD-SNJS-II
G. Pavlou, ERRD-D
J. Frisco, ERRD-DDNJP
M. Pane, ERRD-RAB-A
D. Karlen, ORC-NJSUP
R. Gherardi, OPM-FIN
T. Grier, 5202G
K. Kloo, NJDEPE
C. Moyik, ERRD-PS
D. Younger, PM-214F

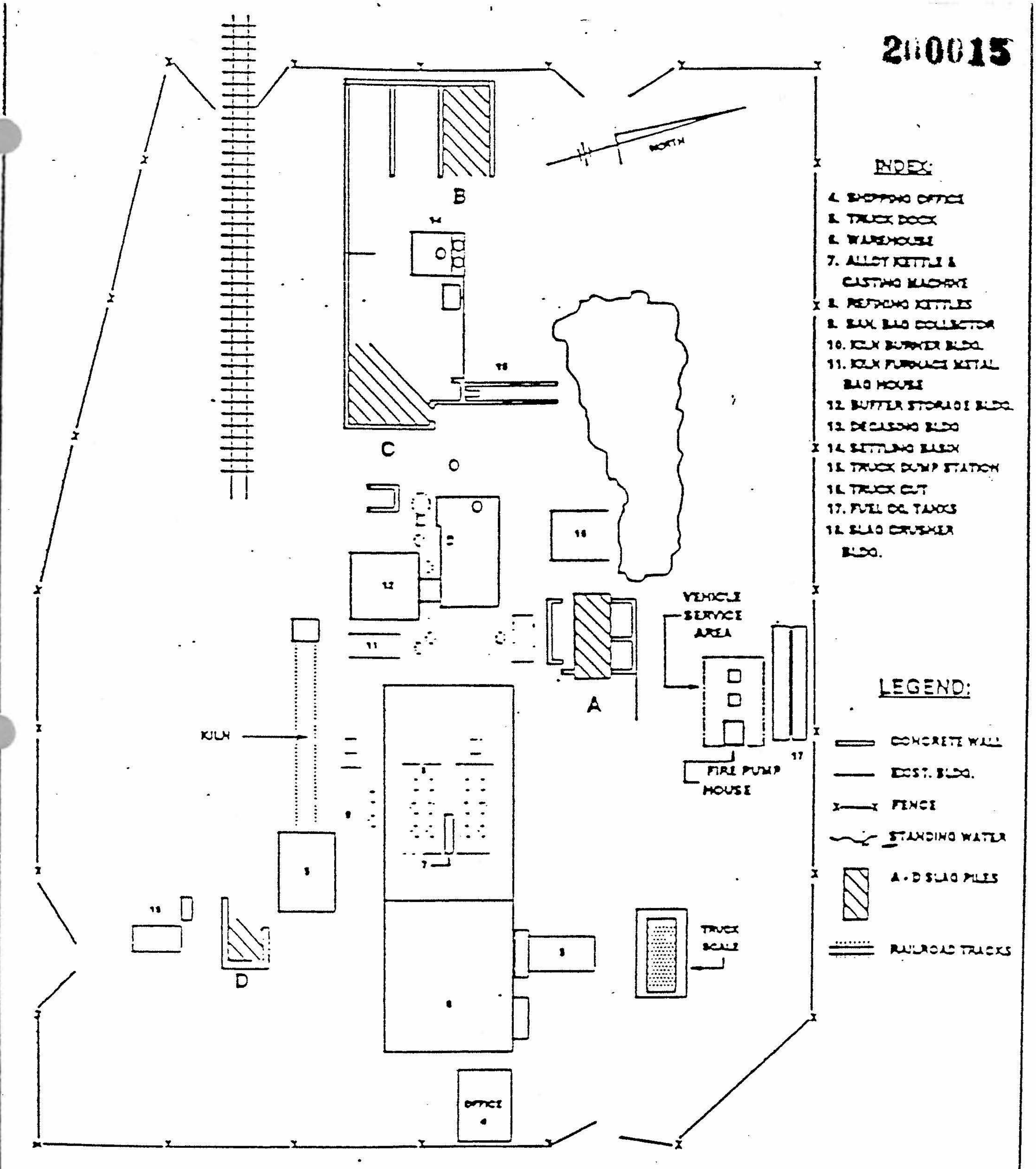
APPENDIX A

MAPS

200014



EPA PM Eugene Dominach	NL Industries Pedricktown, NJ
TAT PM V. Reddy/J. Menfreda	Figure 1



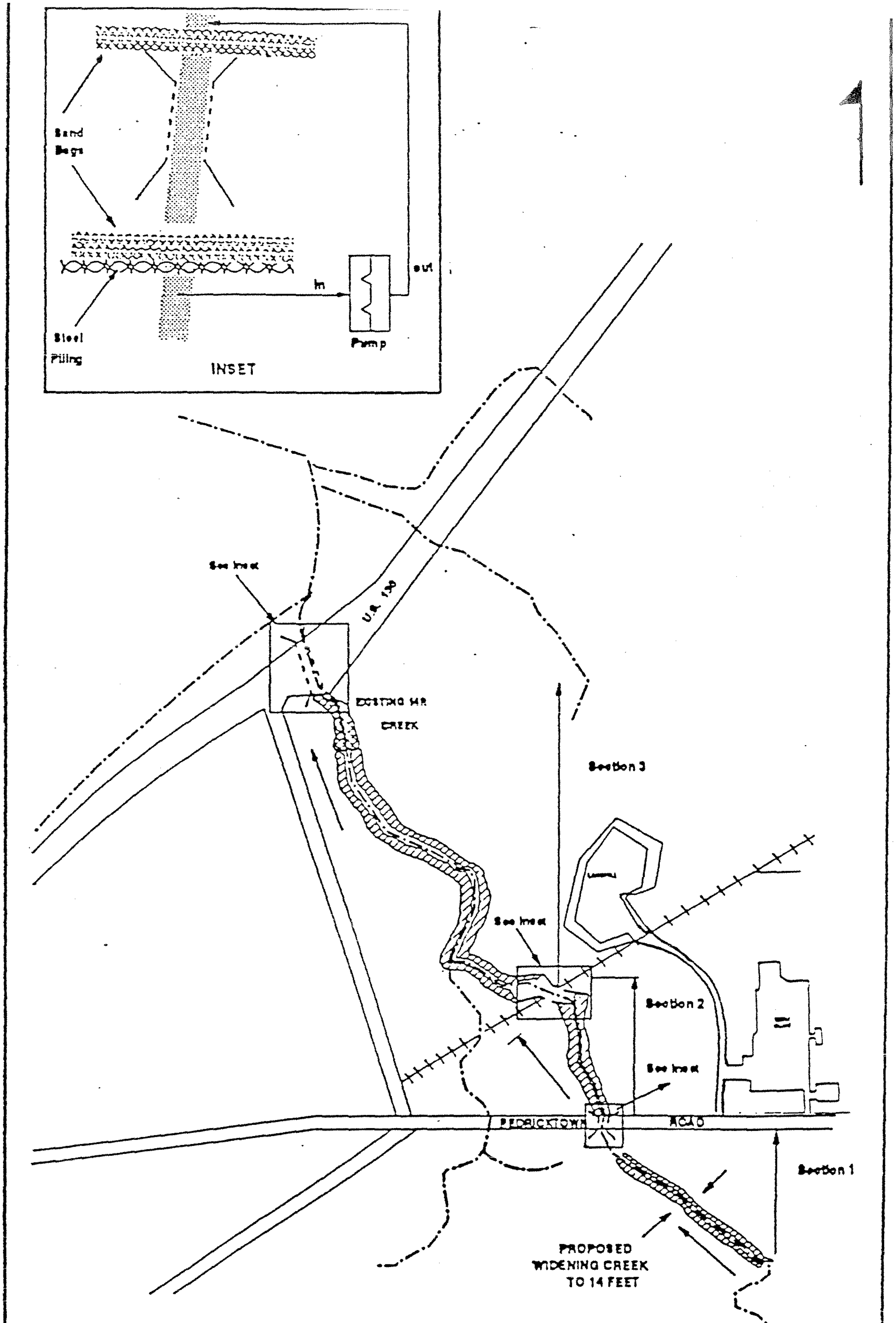
WESTON
MANAGERS DESIGNERS/CONSULTANTS

Roy F. Weston, Inc.
MAJOR PROGRAMS DIVISION

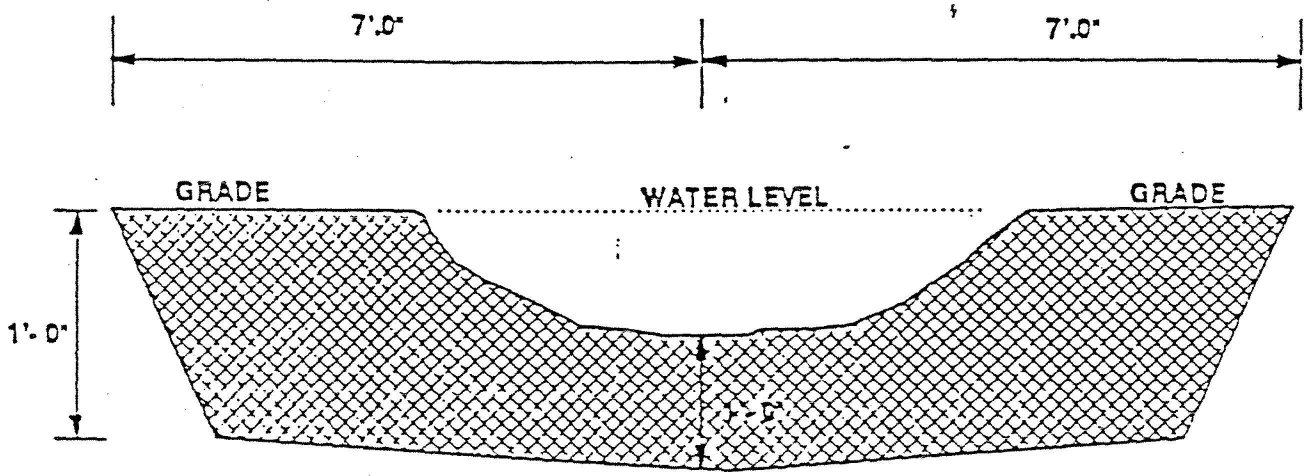
IN ASSOCIATION WITH FOSTER WHEELER CORP.,
C.C JOHNSON & MALHOTRA, P.C., RESOURCE
APPLICATIONS, INC. AND R.E. SARRIERA ASSOCIATES

	EPA PM E. Dominach	NL Industries Site Map
	TAT PM J. Manfreda	Figure 2

200016



WESTON Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION MANAGERS DESIGNERS CONSULTANTS	EPA PM M. Wiggett	West Creek NL INDUSTRIES
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R.E. SARRIERA ASSOCIATES	TAT PM E.G. Dominach	Figure 3



CROSS SECTION OF
WIDENING PROJECT
FOR ENTIRE LENGTH CREEK

DWN. BY JLH
DATE: 05-03-93
DWN.# NL-C

WESTON — Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM M. Wiggett	West Creek NL INDUSTRIES
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R.E. SARRIERA ASSOCIATES	TAT PM E.G. Dominach	Figure 4

SUMMARY OF POTENTIAL TOXICOLOGICAL EFFECTS OF SOME OF THE IDENTIFIED HAZARDOUS CHEMICALS AT:

NL INDUSTRIES

PEDRICKTOWN, NEW JERSEY

	CARCINOGEN	MUTAGEN	TERATOGEN	TOXIC BY INHALATION, INGESTION OR DERMAL CONTACT	CENTRAL NERVOUS SYSTEM DAMAGE	LIVER DAMAGE	CARDIOVASCULAR SYSTEM DAMAGE	LUNG DAMAGE	KIDNEY DAMAGE	LYMPHATIC SYSTEM DAMAGE	EYE, SKIN, RESPIRATORY & MUCOUS MEMBRANE IRRITANT
ANTIMONY				●			●				●
ARSENIC	●			●		●		●	●	●	●
BARIUM				●	●						●
BERYLLIUM	●			●				●			●
CADMIUM	●			●					●		●
CHROMIUM				●							●
COBALT				●							●
COPPER				●							●
CYANIDE				●	●		●	●	●		●
LEAD				●	●						●
MAGNESIUM				●							●
MANGANESE				●	●				●		●
MERCURY				●	●				●		●
NICKEL	●			●				●			●
SELENIUM				●		●			●		●
THALLIUM				●	●	●		●	●		●
VANADIUM				●							●
ZINC				●							●

DWN. BY: DR.
REVISED: 12-21-90
DWN.#2EEED

WESTON MANAGERS DESIGNERS/CONSULTANTS	Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM E. Dominach	TOXIC EFFECTS CHART
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C. JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS INC. AND R.E. SARRIERA ASSOCIATES		TAT PM J. Manfreda	Figure 5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
JACOB K. JAVITS FEDERAL BULDING
NEW YORK, NEW YORK 10278

ACTION MEMORANDUM

DATE: MAY 28 1992

SUBJECT: Request for a Removal Action Restart and Ceiling Increase at the National Lead Industries Site, Pedricktown, Salem County, New Jersey

FROM: Eugene Dominach, On-Scene Coordinator
Removal Action Section A

TO: Constantine Sidamon-Eristoff
Regional Administrator

THRU: Kathleen C. Callahan, Director
Emergency and Remedial Response Division

Site-ID #: 61

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval for a ceiling increase to restart the removal action described herein for the National Lead (NL) Industries Site, Pedricktown, Salem County, New Jersey, 08067. A recent site investigation has revealed that two of the concrete slag bin retaining walls are in danger of collapse and release of the stored slag into the environment is highly probable. The slag contains hazardous constituents; namely lead, arsenic and other heavy metals that will enter the environment.

The NL site continues to meet the criteria for a removal action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as described in Section 300.400 of the National Contingency Plan (NCP).

II. SITE CONDITIONS AND BACKGROUND

This time critical removal action documents the proposed emergency action necessary to address the deteriorating concrete bins and prevent a release into the environment. The site Comprehensive Environmental Response Compensation and Liability Information System ID number ~~assigned~~ is NJD061843249. The removal program has conducted ~~three previous~~ removal actions at the site that have provided for security fencing, slag pile encapsulation, recycling of materials, waste disposal and waste stabilization.

A. Site Description

1. Removal site evaluation

The NL facility began operations in 1972. The main operation at this facility was the reclamation and recycling of lead from batteries and residual materials and the slag produced from the smelting process were disposed in the on-site landfill and at off-site facilities. In 1983, NL sold the property to National Smelting of New Jersey, Inc.(NSNJ). During its period of operation, NL was cited by the New Jersey Department of Environmental Protection and Energy (NJDEPE) with numerous and repeated violations of the state air and water regulations.

In 1984, NSNJ ceased operations and declared bankruptcy. Remaining on-site when operations terminated were four slag piles having an estimated volume of approximately 9,800 cubic yards, 4,000 cubic yards of contaminated debris, 25 tons of hazardous materials stored in the warehouse and approximately 900 cubic yards of lead bearing raw materials in drums and containers in various locations throughout the site. The containers, due to exposure to the elements, age and corrosion, were a threat of release to the environment.

2. **Physical location**

The NL site is an abandoned secondary lead smelting facility situated on 46 acres of land on Pennsgrove-Pedricktown Road, Pedricktown, Salem County, New Jersey (see Figure A).

The site, which includes a closed permitted landfill under the jurisdiction of the NJDEPE, overlies the Cape May Aquifer. Oldmans Creek, a tributary of the Delaware River, used for recreational purposes, borders and receives surface discharges from the site. The Delaware River is 1.5 miles to the west of the site. The nearest home is less than 500 feet from the site and B.F. Goodrich, Martin Propane Gas Service, Pioneer Pallet Co., GBM Ball Bearing, ROD Shop, Wistar Equipment Co. and Corrosion Control Co. are active industrial neighboring facilities. Airco, Browning-Ferris and the Tomah Division of Exxon are inactive companies in the area.

3. **Proposed Site Activity**

The proposed site activity is a Removal Action restart. This is the third Removal Action since the Removal Action Branch began activities at the site. Details of the previous removal actions at the site are detailed in Section II.B of this Action Memorandum.

4. **Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant.**

The NL site, which is characterized by the presence of highly toxic Target Compound List metals (Figure C) was used as a smelting reclamation operation for batteries and lead bearing upgrading building security including the installation of fence gates and locks on all building entrances; reencapsulating the slag piles to prevent the release of airborne particulates; constructing sand berms around the perimeter of the slag piles to prevent run-off from the site caused by adverse weather conditions; and contacting potential recyclers for the raw materials stored on site who recycled approximately 22 tons of material, while two tons of material were disposed of as hazardous.

In April 1990, after partial failure had occurred and potential release of the slag became imminent, the slag pile retaining bin walls were shored with timber. The shoring was designed to provide temporary support to prevent total collapse of the bin retaining walls and release of the slag to the environment.

This phase was completed September 20, 1990 at a cost of $376,010 of which $227,660 was expended for mitigation contracting.

The shoring has been effective in preventing collapse of the bin walls. Replacement of some structural members is now necessary due to warping that is attributable to weathering.

Phase III

A Removal Action to remove 5 tons of copper wire was initiated on November 17, 1990 to curtail the entry of unauthorized persons attempting to steal the wire who could be subsequently exposed to hazardous substances existing on the site.

Other activities performed in Phase III were the transferring and relocation of the contents of exterior stored steel and fiber drums that contained lead bearing waste to a dry and sheltered on-site storage areas and the recycling of 2,200 steel drums. Relocation of the contaminated waste from the deteriorating containers was necessary to eliminate future discharges into the environment via airborne particulates and surface run-off.

Phase III was completed on July 25, 1991 at a cost of $186,720 of which $135,280 was for mitigation contracting.

2. Current actions

A remedial investigation (RI) has been completed and a feasibility study (FS) is ongoing. Both are being financed and conducted by NL and reviewed by EPA. On January 29 and 30, 1992, the EPA Superfund Innovative Technology Evaluation program removed 18 truck loads of lead bearing materials for a recycling treatability study at the Exide Battery Corporation's Reading, Pennsylvania facility. Preliminary results indicate that recycling of additional waste, excluding the slag material, is highly possible in the future.

A Record of Decision (ROD) that encompasses decontamination of debris and contaminated surfaces, treatment and disposal of the slag and lead oxide materials, recycling of appropriate materials, and removal of site standing water was signed by the material from 1972 to 1984. The metals are all designated hazardous substances under Section 101(14) of CERCLA as listed in CFR Table 302.4.

The site currently contains four slag piles containing approximately 9,800 cubic yards of heavy metal contaminated slag; 200 cubic yards of lead oxide; 4,000 cubic yards of lead contaminated debris; and one million gallons of lead contaminated standing water inside and outside the buildings. In addition, the interior of buildings, and the equipment inside are contaminated with lead bearing dust.

The contaminated slag and waste is stored outdoors in deteriorating bins exposed to the elements. Should the structures containing the slag fail, the listed hazardous substances will be released to the air, soil and groundwater. Trespassers forcibly entering the site may make contact with the contaminated soil and lead bearing dust that would be spilled on the ground. The lead bearing dust in the buildings poses a health risk.

5. National Priority List status

The site was placed on the National Priorities List in December, 1982, and is currently ranked number 135.

6. Maps

Site location map, Figure A, and a site map, Figure B, in the appendix.

B. <u>Other Actions to Date</u>

1. Previous actions

To date, the United States Environmental Protection Agency (EPA) has undertaken the two removal actions, consisting of three phases, described below.

<u>Phase I</u>
On December 19, 1988, funding was approved to conduct a removal action at the site, consisting of repairs to the existing fence, installation of 900 feet of new chain link fence, posting warning signs and the temporary encapsulation of the slag piles to help prevent airborne releases from the site. The project was completed on May 31, 1989 at a cost of $77,555.

The new section of fence isolated the facility from the landfill but has not been fully effective in limiting access as several break-ins have been reported. The slag encapsulant has degraded over time.

<u>Phase II</u>
Phase II was initiated on October 11, 1989, and consisted of; inventorying of the on-site hazardous and recyclable materials stored in deteriorating containers which were pending release;

Regional Administrator on September 27, 1991. On March 31, 1992, the Regional Administrator signed a Unilateral Administrative Order (UAO) which was issued to 31 potentially responsible parties (PRPs). On that same date, EPA also issued an Explanation of Significant Differences (ESD) to the ROD which allows the slag and lead oxide materials to be disposed of off site in accordance with all federal, state and local laws. The UAO order the PRPs to implement the remedy selected in the ROD.

The action proposed in this memorandum will support and not interfere or impact the Remedial Activities.

C. State and Local Authorities' Roles

In 1986, the NJDEPE Division of Hazardous Waste Management transferred site responsibility to the EPA to initiate safety measures as part of a long term CERCLA site clean-up. The state contended that the unguarded site was a public health and pollution problem. It was subject to vandalism, trespassing and during heavy rains leachate from the lead-bearing material overflowed to the surrounding soil and groundwater. NJDEPE requested that the buildings be decontaminated to safeguard the public health and the environment.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The appropriateness of this removal action is to abate the threats as listed in 40 CFR Section 300.415, paragraphs (b)(2),(i),(ii),(iii),(iv),(v) and (vi).

A. Threats to the Public Health or Welfare

The Agency for Toxic Substance and Disease Registry Health Assessment for the site confirms that possible human exposure include ingestion, direct contact with groundwater/surface water, soil and possible ingestion of bioaccumulated contaminants in the food chain. Inhalation of entrained contaminants is another means of human exposure. See Toxic Effects Chart Figure C.

B. Threats to the Environment

Atmospheric exposure of lead debris scattered throughout the site may cause lead and heavy metal contaminants to be carried off-site via surface run-off and airborne particulates.

The four slag piles contain a loose and dusty residual slag generated from the smelting operation that is mounded in outdoor bins exposed to the elements.

The concentrations of lead found in a November 1989 sampling of the slag, ranged from 8,950 to 252,010 parts per million (ppm).

Lead oxide waste material exists within piping, drums, tanks, piles, and the process and ventilation equipment in the decasing and refining buildings. Three samples of these wastes were analyzed for metals listed in CFR 40, Table 302.4, List of Hazardous Substances and Reportable Quantities. The concentration of lead ranged from 101,000 to 437,000 ppm. Cadmium, arsenic, aluminum, magnesium, and antimony were also found in moderately high concentrations.

Wipe samples from equipment and the interior of buildings showed high concentrations of lead, iron, cadmium, nickel and copper, as well as low concentrations of TCL metals, such as arsenic, cobalt and vanadium.

The surface water on-site contains hazardous substances including lead and cadmium, in concentrations detrimental to public health and the environment.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The proposed scope of work for Phase IV of this project includes:

- o Installation of wood shoring to the east side of the "A" slag pile concrete retaining wall to prevent total collapse of the wall and release of the slag to the environment.
- o Replacement of damaged wood shoring on the south side of the "D" slag pile concrete retaining wall. Six of the existing wood supports have warped and require replacement to prevent collapse of the wall and release of the slag into the west creek.
- o The cleanup of accumulated slag sediment from the plant roads and flooded areas if the standing water has evaporated. Sediment will be returned to the slag piles and no removal of material from the site will be undertaken.
- o Perimeter fence repairs from a recent break-in.
- o An additional $15,000 dollars to finance underestimated costs by the contractor from the previous removal action. This amount, not an entry in the RCMS cost projection, is added as an entry to increase the total Removal Project Ceiling.

2. Contribution to remedial performance

The repairs to the slag bin concrete retaining walls will temporarily stabilize the bin walls and limit further contamination of the soil and groundwater until treatment of this material is performed as described in the ROD. Fence repairs are necessary to maintain site integrity and discourage vandals from entering the site.

The ROD provides for the treatment and disposal of the slag and lead contaminated waste, removal of contaminants from the buildings and structures, and removal of the contaminated ponded water. The actions described above will supplement the ROD by limiting site access and stabilizing the bin walls until the remedy selected in the ROD can be implemented.

3. Description of alternative technologies

Physical replacement of the temporary structural timber or replacement of the bin walls are the two alternatives available. Replacing the supporting timber will stabilize the slag and is the most cost effective option until the slag can be removed from the site.

4. EE/CA

Due to the time critical nature of this removal action, this section does not apply.

5. Applicable or relevant and appropriate requirements (ARARs)

The scope of work proposed in this memorandum includes the stabilization of the slag bin retaining walls and repairing the existing fence. Federal ARARs determined to be practicable for the site are the Clean Water Act, Resource Conservation and Recovery Act, Toxic Substances Control Act and the Occupational Safety and Health Act. EPA will meet the ARARs associated with these tasks to the maximum extent practical.

The proposed removal activity is an interim activity that will be followed by a remedial action that will attain the applicable or relevant and appropriate federal or state standards.

6. Project schedule

The project can be initiated within two weeks after approval and is expected to be completed within one week (Work Schedule, Figure D).

B. Estimated Costs

Extramural Costs:

1. Regional Allowance Costs

Total Cleanup Contractor Costs (ERCS) (Includes a 20% Contingency)	$ 16,000

2. Other Extramural Costs Not Funded From The Regional Allowance

Total TAT, including multiplier costs	$ 5,800
Subtotal Extramural Costs	$ 21,800
Extramural Costs Contingency 15%	$ 3,260

3. TOTAL, EXTRAMURAL COSTS (Rounded) $ 25,000

Intramural Costs:

	Intramural Direct Costs	$ 3,000
	Intramural Indirect Costs	$ 5,200
4.	TOTAL, Intramural Costs	$ 8,200
5.	TOTAL, REMOVAL PROJECT CEILING	$ 33,200
	Underestimated Contractor Costs	$ 15,000
	TOTAL, REMOVAL PROJECT CEILING	$ 48,200

NEW PROJECT CEILING

	Phases I-III Authorized Ceiling	Phase IV Estimated Budget	Project Ceiling
ERCS	$ 460,400	$ 31,000	$ 491,400
TAT	$ 107,690	$ 5,800	$ 113,490
Cont.	310	$ 3,200	$ 3,510
EPA	$ 126,600	$ 8,200	$ 134,800
TOTAL	$ 695,000	$ 48,200	$ 743,200

New Project Ceiling . . . .$ 743,200
Ceiling Increase . . . .$ 48,200
Mitigation Contracting Increase. . . . .$ 31,000

See page 19 for a Removal Cost Management System detailed cost estimate.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

The proposed project will extend the useful life of the slag bin concrete retaining walls for approximately 1.5 years provided no major weather pattern develops to upset existing conditions. Delayed action may cause failure of the concrete bin walls at any time, releasing heavy metal contaminated slag into the environment.

VII. OUTSTANDING POLICY ISSUE

There is an issue as to whether any creditors may have claims to the copper wire now stored at the EPA facility in Edison, NJ or other salvageable equipment remaining on-site. This issue is now being investigated by Office of Regional Counsel in conjunction with the Department of Justice.

VIII. ENFORCEMENT

EPA has named 31 PRPs in the UAO to implement the ROD. PRPs are required to notify EPA of their intent to comply with the UAO by the middle of May 1992. However, due to the time-critical nature of this request, a prompt removal activity is necessary.

IX. RECOMMENDATION

This decision document represents the selected removal action for the NL Industries site, in Pedricktown, New Jersey, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the site.

Conditions at the site meet the NCP Section 30.415 (b)(2) criteria for a removal and I recommend your approval of the proposed removal action. The total project ceiling if approved will be $743,200, of which $491,400 is from the regional removal allowance. This request is for an increase of $31,000 for mitigation contracting.

Sufficient funding is available in our current Advice of Allowance to finance this project. Your signature below approves the ceiling increase of $48,200 for the NL site according to current Delegation of Authority.

Approved: ______________________ Date: 6/1/92
Constantine Sidamon-Eristoff
Regional Administrator

Disapproved: ______________________ Date: ____________
Constantine Sidamon-Eristoff
Regional Administrator

cc: (after approval is obtained)

K. Callahan, ERRD-D
R. Salkie, ERRD-ADREPP
J. Frisco, ERRD-DDNJP
G. Zachos, ERRD-RAB
M. Pane, ERRD-RAB-A
J. Marshall, EPD
D. Karlen, ORC-NJSUP
R. Gherardi, OPM-FIN
D. Dietrich, OS-210
T. Grier, OS-210
L. Miller, NJDEPE
K. Kloo, NJDEPE
C. Moyik, ERRD-PS
C. Kelley, TATL
D. Younger, PM-214F

NL INDUSTRIES

APPENDIX A

Figure A Site Location
Figure B Site Map
Figure C Toxicological Effects of Identified Substances
Figure D Work Schedule

APPENDIX B

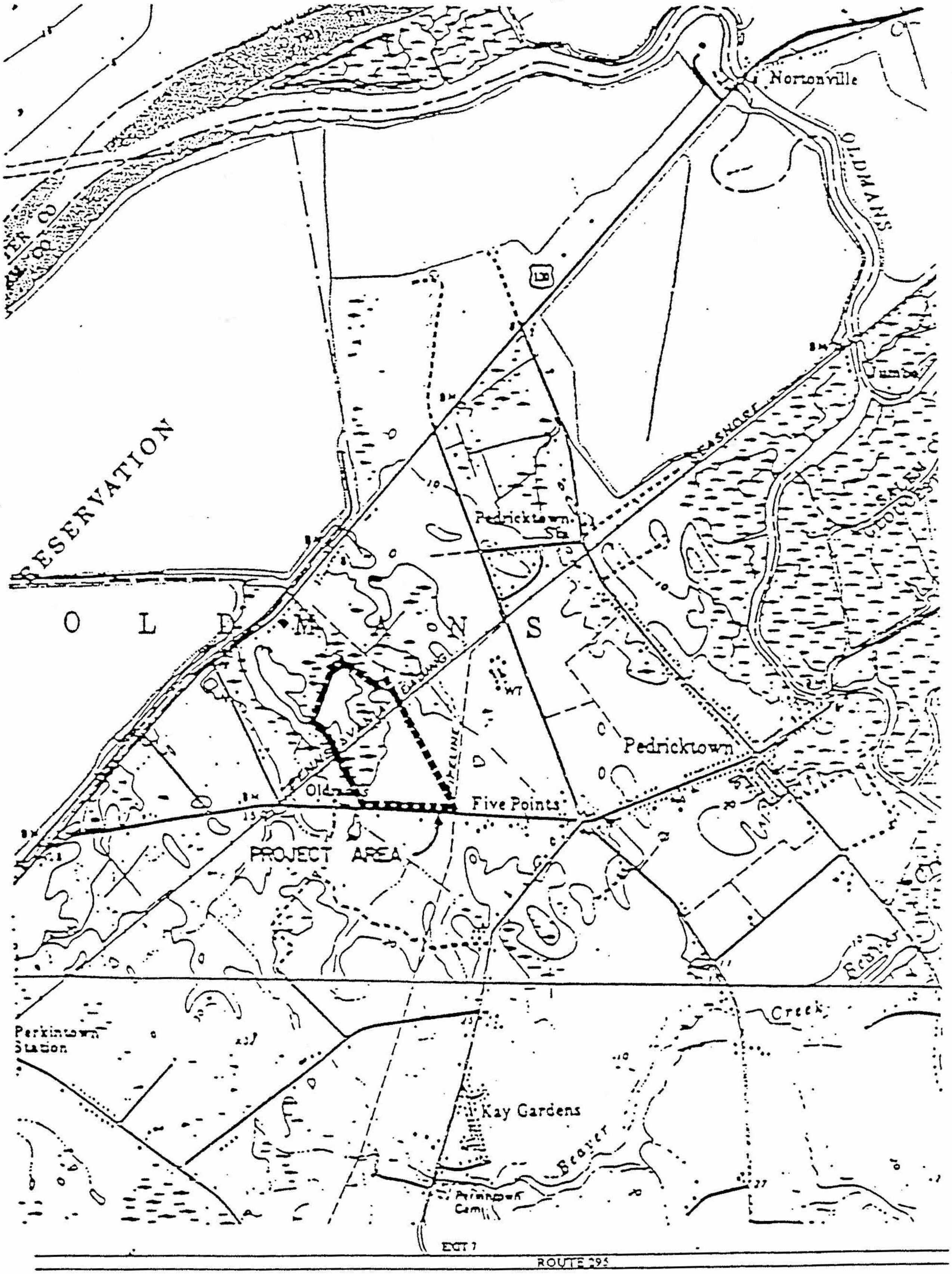
Table 1 - Materials recycled
Table 2 - Materials disposed off-site

APPENDIX C

Detailed Cost Estimate

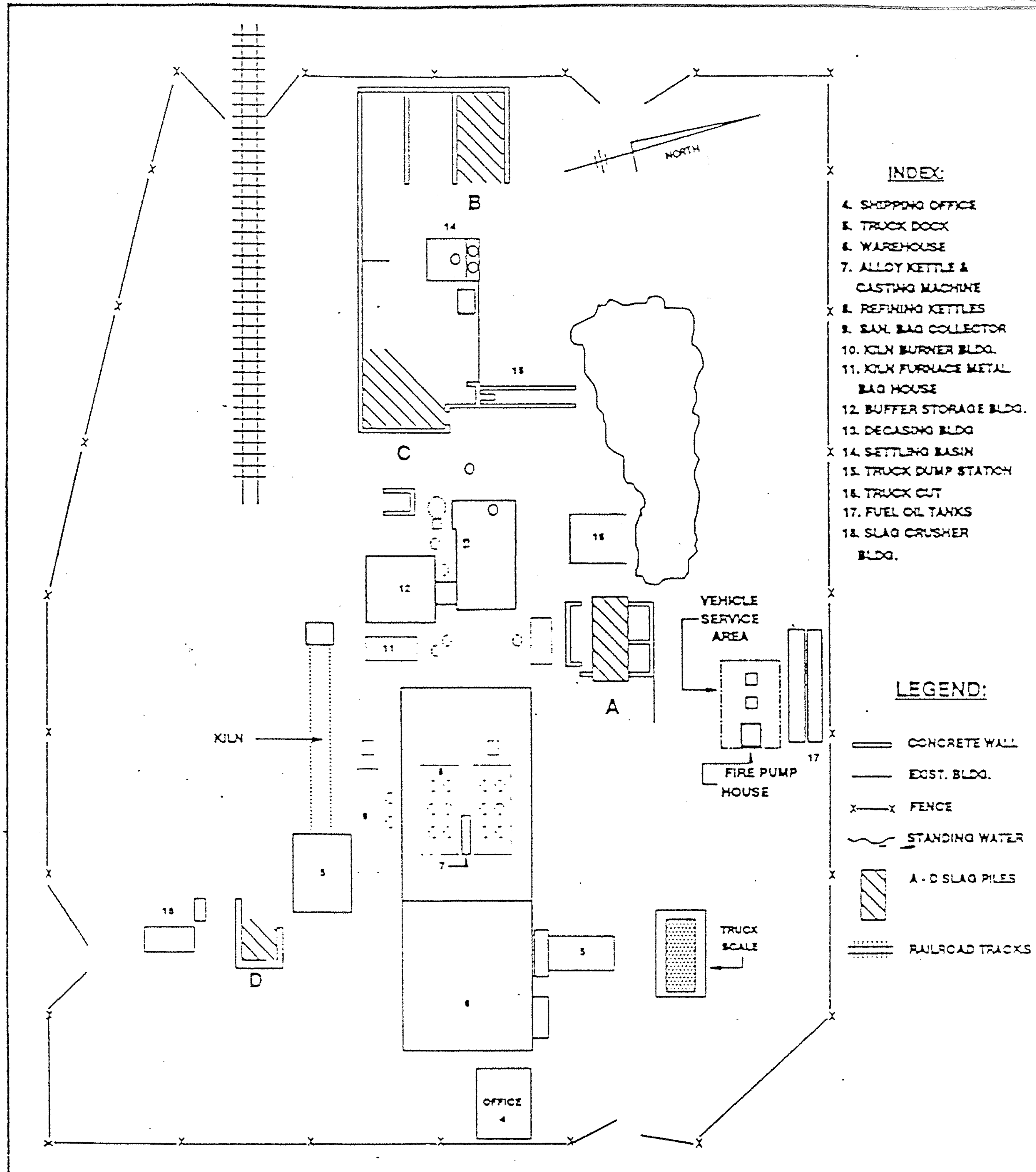
APPENDIX A

MAPS



300031

WESTON SPILL PREVENTION & EMERGENCY RESPONSE DIVISION	EPA PM Eugene Dominach	NL Industries Pedricktown, NJ
In Association with ICF Technology Inc., C.C. Johnson & Associates, Inc., Resource Applications, Inc., Geo/Resource Consultants, Inc., and Environmental Toxicology International, Inc.	TAT PM V. Reddy/J. Menfreda	Figure A



WESTON MANAGERS DESIGNERS/CONSULTANTS — Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM E. Dominach	NL Industries Site Map
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R.E. SARRIERA ASSOCIATES	TAT PM J. Manfreda	Figure B

SUMMARY OF POTENTIAL TOXICOLOGICAL EFFECTS OF SOME OF THE IDENTIFIED HAZARDOUS CHEMICALS AT:

NL INDUSTRIES

PEDRICKTOWN, NEW JERSEY

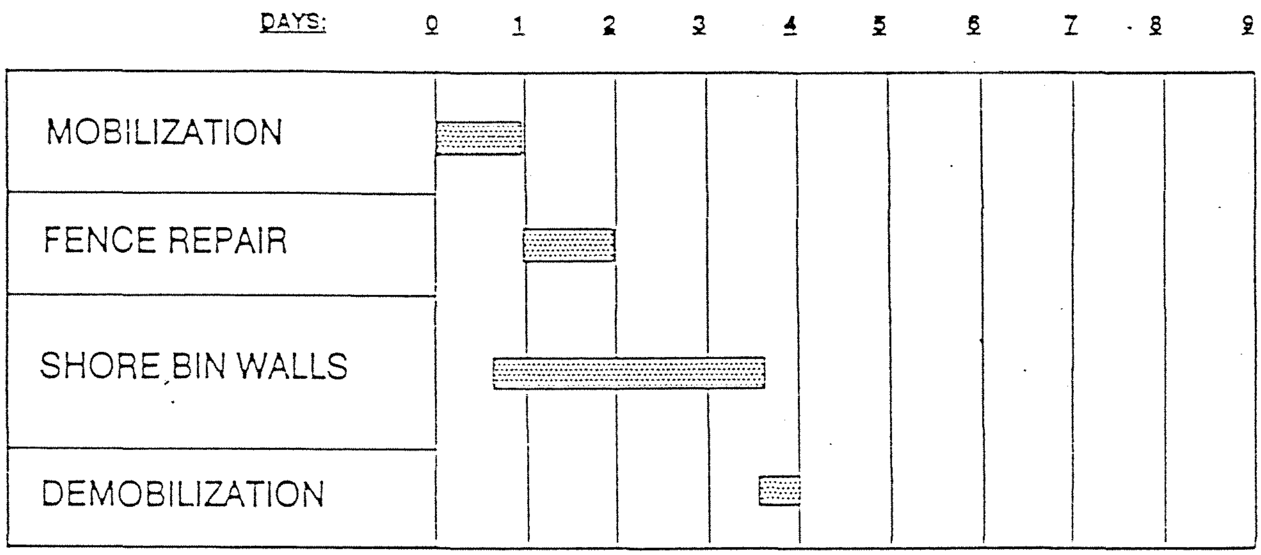
	CARCINOGEN	MUTAGEN	TERATOGEN	TOXIC BY INHALATION, INGESTION OR DERMAL CONTACT	CENTRAL NERVOUS SYSTEM DAMAGE	LIVER DAMAGE	CARDIOVASCULAR SYSTEM DAMAGE	LUNG DAMAGE	KIDNEY DAMAGE	LYMPHATIC SYSTEM DAMAGE	EYE, SKIN, RESPIRATORY & MUCOUS MEMBRANE IRRITANT
ANTIMONY				●			●				●
ARSENIC	●			●		●		●	●	●	●
BARIUM				●	●						●
BERYLLIUM	●			●				●			●
CADMIUM	●			●					●		●
CHROMIUM				●							●
COBALT				●							●
COPPER				●							●
CYANIDE				●	●		●	●	●		●
LEAD				●	●						●
MAGNESIUM				●							●
MANGANESE				●	●				●		●
MERCURY				●	●				●		●
NICKEL	●			●				●			●
SELENIUM				●		●			●		●
THALLIUM				●	●	●		●	●		●
VANADIUM				●							●
ZINC				●							●

DWN. BY: DR.
REVISED: 12-21-90
DWN.#25880

WESTON MANAGERS DESIGNERS/CONSULTANTS — Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM E. Dominach	TOXIC EFFECTS CHART
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC AND R.E. SARRIERA ASSOCIATES	TAT PM J. Manfreda	Figure C

NL INDUSTRIES

PEDRICKTOWN, NEW JERSEY



WESTON MANAGERS DESIGNERS/CONSULTANTS Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM E. Dominach	Work Schedule
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R.E. SARRIERA ASSOCIATES	TAT PM J. Manfreda	Figure D

APPENDIX B

TABLES

Table 1

NL Industries
Recycled Materials

Material	Pounds	Material	Pounds
Arsenic *	250	Red Phosphorus *	2540
Sodium Metal *	600	Calcium Oxide	500
Castable Cement	1500	Sodium Hydroxide *	11600
Sodium Nitrate *	6000	Copper Sulfate	4200
Cylinders	2	Sulfur	12500
Potassium Hydroxide*	2550	Waste Oil	3000

Note: Recycling of this material has resulted in considerable savings in analytical, transportation, labor and disposal costs.

Table 2

NL Industries
Materials Disposed Off-site

Material	Pounds	Material	Pounds
Asbestos *	800	Red Phosphorus *	180
Sodium Metal *	1050	Clothing (Cu.Yds.)	20
Sodium Hydroxide *	2000	Flowmeter (nuclear)	1
Cylinders	3		

* These materials are listed hazardous substances in 40 CFR 302.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON, NEW JERSEY 08837

MEMORANDUM

DATE: JAN 22 1991

SUBJECT: Request for a Ceiling Increase; a 12-Month Exemption; Confirmation of Verbal Approval and Change in Scope for the National Lead Industries Site, Pedricktown, Salem County, New Jersey

FROM: Eugene Dominach, On-Scene Coordinator
Removal Action Branch Eugene Dominach

TO: Constantine Sidamon-Eristoff
Regional Administrator

THRU: Richard L. Caspe, P.E., Director
Emergency and Remedial Response Division

Site/Spill-ID: 61

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the proposed change in scope, twelve month exemption, confirmation of verbal approval and ceiling increase described herein for the National Lead (NL) Industries site, Pedricktown, Salem County, New Jersey.

The scope of work for this proposed removal action includes removal of the copper wire from the site and the relocation of stored hazardous materials that are exposed to the weather to a partially enclosed area. The purpose of removing the copper wire to a secure area in Edison, New Jersey is to eliminate the continuous break-ins by vandals to remove this valuable commodity. The entering of unauthorized personnel presents a contact and inhalation threat to these persons. The moving of the hazardous materials into a dry sheltered area will eliminate the continuous off-site discharges of heavy metal contaminated waste via surface run-off and air-borne particulates.

The NL site continues to meet the criteria for a removal action under the Comprehensive Environmental, Response, Compensation and Liability Act (CERCLA) as described in Section 300.4 of the National Contingency Plan (NCP) dated March 8, 1990.

II. SITE CONDITIONS AND BACKGROUND

This removal action documents both the emergency action taken under the verbal approval of November 16,1990 and the proposed time-critical action for this site with the CERCLIS ID number of NJD061843249. The removal program has prepared a feasibility study to remove the bulk lead contaminated materials but these actions are subject to further examination and future implementation.

A. Site Description

1. Removal site evaluation

The main issues that currently confront this site are repeated vandalism, breaches of security, robbery of copper wire and the exposure of intruders to hazardous materials. The contamination of off-site areas and humans via the removal of contaminated materials from the site by the vandals and the air borne and surface discharges of the stored hazardous materials constitute the environmental problems this removal action proposes to correct.

2. Physical location

The NL Industries site is an abandoned secondary lead smelting facility situated on 46 acres of land on Pennsgrove-Pedricktown Road, Pedricktown, Salem County, New Jersey. See Figure A, Page 17.

The site, which includes a closed permitted landfill under the jurisdiction of the New Jersey Department of Environmental Protection (NJDEP), overlies the Cape May aquifer. Oldmans Creek, a tributary of the Delaware River used for recreational purposes, borders and receives surface discharges from the site. The Delaware River is 1.5 miles to the west of the site. The nearest home is less than 500 feet from the site and B.F. Goodrich and the Tomah Division of Exxon are active industrial neighboring facilities. See Figure B, Page 18.

3. Site characteristics

The National Lead site, which is characterized by the presence of highly toxic Target Compound List (TCL) metals, see hazardous substances table, page 15, was used as a smelting and lead reclamation operation from automobile batteries from 1972 to 1980.

The site contains slag piles; lead oxide stored in piles and deteriorated drums; lead oxide dust throughout the building interiors; various quantities of lead contaminated debris; and over 1 million gallons of lead contaminated water inside and outside the buildings.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant.

Surface runoff from the stored hazardous waste materials is a significant exposure pathway from the NL site.

Toxic metal containing dust is potentially capable of becoming air-borne and carried from the site to the nearby farming and residential areas.

The standing water, contaminated with lead and other toxic heavy metals, is eventually capable of entering the groundwater, Oldmans Creek and finally the Delaware River.

5. National Priority List Status

The site is ranked number 135 on the National Priority List.

Currently a remedial investigation/ feasibility study financed by NL Industries is in progress and nearing completion.

6. Maps

Site location map, Figure "A", Page 17, and a site map, Figure "B", Page 18, in the appendix.

B. <u>Other actions to Date</u>

1. Previous actions

On December 19, 1988, EPA Removal Action Branch Phase I funding was granted to repair the existing fence, install 900 feet of new chainlink fence, post hazardous waste warning signs and encapsulate the slag piles to help prevent further releases from the site.

In November 1989, Phase II of the removal action began which included inventorying of the on-site hazardous and recyclable materials stored in deteriorating containers pending release, provided for additional building security and reencapsulation of the slag piles. Manufacturers and Smelters were contacted as potential recyclers for the raw materials stored on site. This removal action was completed in September 1990.

The following tabulated materials were recycled:

Material	Pounds
Arsenic *	250
Calcium Oxide	500
Castable Cement	1500
Copper Sulfate	4200
Cylinders	2
Potassium Hydroxide *	2550
Red Phosphorus *	2540
Sodium Metal *	600
Sodium Hydroxide *	11600
Sodium Nitrate *	6000
Sulfur	12500
Waste Oil	3000

Recycling of this material has resulted in considerable savings in analytical, transportation, labor and disposal costs.

The hazardous material disposed of off-site included:

Material	Pounds
Asbestos *	800
Clothing	20 cu. yds.
Cylinders	3
Flowmeter (nuclear)	1
Red Phosphorus *	180
Sodium Metal *	1050
Sodium Hydroxide *	2000

* These materials are listed hazardous substances in 40 CFR 302.

In April 1990, the slag pile retaining bin walls were shored with timber after partial failure had occurred and release was imminent. The shoring will temporarily prevent total wall collapse and release of the slag to the environment.

Enhanced security measures, during the Phase II removal activities, included installation of chain link fence gates with chain locks on all building entrances to prevent unauthorized entry into the lead contaminated buildings.

In June 1990, an in-house Removal Action/Feasibility Study was completed that included investigation of the available innovative techniques for the treatment and disposal of the various waste streams. A detailed cost estimate was provided for each waste to minimize landfill disposal or to recycle the recoverable metal.

To prepare for potential releases during the winter months, sand berms were constructed around the open perimeter of the slag piles.

2. Current actions

Guard service was initiated on November 17, 1990 to prevent the continued vandalism and robbery of copper wire and cable.

C. State and Local Authorities' Roles

1. State and local actions to date

The NJDEP, between 1973 and 1980, cited NL with numerous and repeated violations of the air and water regulations.

In 1976, the Salem County Department of Health sampled onsite surface water and nearby residential wells and confirmed the presence of hazardous substances greater than the allowable limits.

In 1977, the NJDEP ordered NL to replace the blast furnace with a rotary kiln. In 1980, the NJDEP ordered NL to construct a lined landfill to replace the existing unlined landfill.

In 1980, the NJDEP and NL entered into an ACO requiring NL to conduct a remedial program at the site.

In 1983, NL sold the property to National Smelting of New Jersey, Inc.(NSNJ). In 1984, NSNJ ceased operations and declared bankruptcy.

In 1985, site responsibility was transferred from the NJDEP to the United States Environmental Protection Agency (U.S.EPA) to initiate safety measures as part of a long term CERCLA site clean-up.

In 1986, NL signed a consent order with EPA for conducting a long-term RI/FS at the site.

2. Potential or continued state/local response

There is no potential for future state/local response.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

1. Quantities and types of substances present

The site contains an extensive amount of copper cable and wire. The site is unguarded and is secured only by a fence. Since the copper is a valuable commodity, thieves and vandals continually break-in, trespass through the contaminated waste to remove the copper and sell it as scrap for as much as $.90/lb.

Dates of entries reported to the New Jersey State Police for this year are; June 10, September 21, October 16 and 31, and November 5th and 14th. The vandals continually cut the fence and locks on the doors leading into the buildings. On November 5th, the vandals unbolted a section of fence near the landfill gate, entered the plant and removed wire and electrical switch gear from the refining building.

The vandals have been repeatedly exposed to the highly contaminated lead dust and are transporting the toxic contaminant off-site into their homes, potentially exposing loved ones and others that may include food establishments or recycling center personnel.

On November 2, 1990, EPA responded to the October 31st entry and installed additional hazardous warning signs and attached Material Safety Data Sheets to the entrances used by the thieves. The Material Safety Data Sheets explain the toxicological hazards of lead and its compounds. The warnings of the consequences of the exposure to lead and heavy metals have been ignored by the intruders.

2. Potential health and toxicological effects

The Agency for Toxic Substance and Disease Registry (ATSDR) Health Assessment has confirmed that human exposure includes ingestion, direct contact with groundwater/surface water, soil and possible ingestion of bio accumulated contaminants in the food chain. Inhalation of entrained contaminants is another means of human exposure. See Toxicological Chart Figure C, Page 19.

Removal of the copper wire from the site by EPA will potentially end continued vandalism, thefts, personnel exposure and contamination of off-site areas.

B. Threats to the Environment

Atmospheric exposure of lead debris scattered unprotected throughout the site causes lead and heavy metal contaminants to be carried off-site via surface run-off and air-borne particulates.

There are four slag piles estimated to contain approximately 5,000 cubic yards of a loose and dusty residual slag generated from the smelting operation which is stockpiled in outdoor bins exposed to the elements.

The concentrations of iron and lead found in a November 1989 sampling of the slag ranged from 10,000 to 264,000 and 8,950 to 252,010 ppm, respectively. Elements from the List of Hazardous Substances, 40 CFR Table 302.4, although lower in magnitude were present in all the samples.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

200043

DATE: FEB 28 1990

SUBJECT: Request for a Twelve Month Exemption for the NL Industries Site, Pedricktown, New Jersey - ACTION MEMORANDUM

FROM: Eugene Dominach, On-Scene Coordinator
Removal Action Branch

For

S Luftig

TO: Constantine Sidamon-Eristoff
Regional Administrator

Stephen D. Luftig, Director
Emergency and Remedial Response Division

S Luftig

Site/Spill No.: 61

Category of Removal: Time Critical

National Significance: NPL

I. ISSUE

Continued response actions of a duration greater than twelve months cannot be undertaken unless an exemption to Section 104(c)(1) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) is granted. Removal activities at the NL Industries (NL) site were initiated on January 9, 1989 and the one year time frame for removal actions under CERCLA/SARA will expire February 9, 1990. Circumstances (discussion to follow) have arisen which will prevent the removal action from being completed within the twelve month time frame authorized by CERCLA.

Accordingly, an exemption from the twelve month limit is requested and necessary since the proposed removal activities are expected to take more than two years to complete.

II. BACKGROUND

The NL site is an abandoned secondary lead smelting facility located in an Industrial Park in a rural area in which the nearest home is 1000 feet away. The defunct facility lies above the Cape May Aquifer and surface water leaving the site discharges into Oldmans Creek, a tributary of the Delaware River.

During the plants operating years 1973-1980, 46 violations were issued by the New Jersey Department of Environmental Protection (NJDEP) for infractions of the State's air and water regulations. Air monitoring by the State identified airborne releases of lead, cadmium, antimony and ferrous sulfate resulting in widespread damage to personal property and soil contamination. On-site surface water and nearby residential wells sampled in 1976 by the Salem County Department of Health confirmed the presence of cadmium and lead. A loose/dusty red colored residual byproduct (slag) from the smelting processs, consists of mainly iron oxide (rust) and trace quantities of lead and other heavy metals. The slag, stored in open bins, entered the environment via surface water run-off and as airborne particulates.

A. Incident/Response History

The United States Environmental Protection Agency (EPA) has approved two action memoranda for the site: Janauary 9, 1989 (Phase I) and September 12, 1989 (Phase II). The removal actions completed to date include securing of the site and buildings; encapsulation of the slag piles to prevent airborne release and surface run-off of lead containing dust; recycling of flammable solids, oxidizers, combustibles, corrosives, non-hazardous materials, gas cylinders and waste oils; disposal of a radioactive (gamma source) flowmeter and asbestos. Residual waste streams from the Phase II removal action remain on-site awaiting analyses and waste acceptance by approved disposal facilities.

Currently remaining on-site and detrimental to human health and the environment, and being evaluated for a future removal action, are the following: 2000 tons of slag, piles and containers of lead oxide, lead contaminated debris, metal skimmings, and contaminated surface water from the overflowing pond.

The NL Site was placed on the NPL list in September 1983.

B. Site Conditions

EPA assumed the lead from NJDEP for site investigation and remediation in July 1985. NL Industries, Inc., a former owner of the facility, entered into an Administrative Order on Consent with EPA in April 1986, and assumed responsibility for conducting an RI/FS. The second round of sampling for the RI was completed in October 1989 and the draft RI Report is scheduled for submission to EPA in April 1990.

The twelve-month limit exemption is needed to provide additional time to complete the Phase II Removal Action due to the extensiveness of the work. This action will provide a more immediate response to lessen the threat that the stored materials pose to the environment and public health.

III. <u>EXEMPTION FROM STATUTORY LIMITS</u>

Section 104(c)(1) of CERCLA limits Federal removal actions to twelve months in duration unless certain criteria are met. The manner in which this removal action meets the criteria for an exemption to the twelve month time limit is as follows:

A(i). <u>Continued Reponse Actions are Immediately Required to Prevent, Limit, or Mitigate an Emergency</u>

Removal of the hazardous materials on site is of primary concern to eliminate the health threat to the public. Removal of the slag poles is essential to prevent contaminated surface water run-off, predominantly reddish in color, from leaving the site and potentially contaminating nearby waterways and groundwater. Levels of lead found in nearby residential wells may be attributable to this facility.

A(ii). <u>There is an Immediate Risk to Public Health, Welfare, or the Environment</u>

There is an immediate threat to public health and the environment due to the presence of lead and lead compounds. Lead dust releases to the atmosphere are eminating from on-site debris, lead oxide piles, slag piles, and contaminated buildings and equipment.

Drinking water supplies of the nearby residents may also become contaminated due to the run-off of site surface water containing lead, arsenic and other toxic metals.

The draft Agency for Toxic Substance and Disease Registry (ATSDR) health advisory confirms these findings. Past releases from this site have been documented by NJDEP and residences are within 1000 feet of this site.

A(iii). <u>Assistance Will Not Otherwise be Provided on a Timely Basis</u>

No other level of government or Potential Responsible Party (PRP) has agreed to provide for the mitigation of the on-site hazardous materials on a timely basis.

B. <u>Continued Response Actions are Otherwise Appropriate and Consistent with the Remedial Action to be Taken</u>

Removal of the source material which consists of tons of slag in piles and bulk containers containing high concentrations of lead, lead oxide and the contaminated standing water on site are in accord with the remedial plans for the site.

IV. PROPOSED ACTIONS

The future actions planned for the site include decontamination of the building and equipment and the recycle or disposal of the various waste streams. The waste streams include the lead oxide in piles and deteriorating drums, the lead contaminated slag piles and dust collector bags and other debris, toxic metals and heavy metal skimmings (dross) and lead contaminated surface water.

The Removal Action Branch prepared a study report on November 8, 1989 to investigate and confirm the nature and extent of site contamination and to determine the most cost effective disposal alternatives for the waste streams (slag piles, lead oxide, dross material lead oxide contaminated debris) which remain on-site. This proposed action is expected to take more than two years to complete.

V. RECOMMENDATION

Because conditions at this site meet the CERCLA 104(c)(1) criteria, I recommend that you approve an exemption from the twelve month limit to allow for the continuation of removal activities at the NL Industries site in Pedricktown, New Jersey.

Your authority to approve this request was established by Lee Thomas' September 21, 1987 Interim Delegation 14-1-A.

Approval: ______________________ Date: 3-12-90
Constantine Sidamon-Eristoff
Regional Administrator

Disapproval: ______________________ Date: ____________
Constantine Sidamon-Eristoff
Regional Administrator

cc: (after approval is obtained)
S. Luftig, 2ERR
R. Salkie, 2ERR-ADREPP
G. Zachos, 2ERR-RAB
J. Frisco, 2ERR-ADNJP
J. Marshall, 2OEP
D. Karlen, 2ORC-NJSUP
R. Gherardi, 2OPM-FIN
S. Anderson, PM-214F (Express Mail)
H. Crum, OS-210
L. Miller, NJDEP
J. Trela, NJDEP
D. Henne, TATL
C. Moyik, 2ERRD-PS
L. Guarneiri, OS-210
J. Rosianski, 2OEP

f. The availability of other appropriate Federal or State response mechanisms to respond to the release [300.65(b)(2)(vii)];

No other Federal or State agency has come forward to offer assistance at this time.

VI. ENFORCEMENT SUMMARY

NJDEP obtained $600,000 from NL as a condition of the Amended Administrative Consent Order of February 1983 between NJDEP, NL, NSNJ and NSR. In addition, NJDEP obtained $500,000 from Standard Metals during the 1984-85 joint bankruptcy proceedings of NSNJ, NSR and Standard Metals. NJDEP has indicated that these funds are available to EPA to finance removal/remedial activities at the site.

To date EPA has identified as Potentially Responsible Parties (PRPs) for the site the following four companies:

NL Industries, Inc. (NL)
National Smelting of New Jersey, Inc. (NSNJ)
National Smelting and Refining, Inc. (NSR)
Standard Metals Corporation (Standard Metals)

NSNJ is a wholly-owned subsidiary of NSR, which in turn is 50% owned by Standard Metals.

NL signed an Administrative Order on Consent with EPA in April 1986, requiring NL to conduct the ongoing Remedial Investigation and Feasibility Study at the site.

EPA is continuing its search for additional PRPs for the Site.

VII. PROPOSED PROJECT AND COSTS

A. Project Objective

The object of the Phase II Removal Action is to remove the threat of fire/explosion and the threat of direct contact to the hazardous materials at the former smelting facility of the site. The objective will be accomplished by removing the materials listed in Table I, by recycling as many raw materials as possible, re-encapsulation of the slag piles, isolation of the tonnage quantities of lead oxide and lead oxide contaminated materials and providing additional building security.

The activities proposed are consistent with the requirement of Section 104(a)(2), 42 U.S.C. §9604(a)(2), of CERCLA which states that "any removal action undertaken...should, to the extent... practicable, contribute to the efficient performance of any long-term remedial action with respect to the release or threatened release concerned."

B. Project Tasks

This section presents the major tasks and estimated costs required to achieve the objective of the Phase II Removal Action. The tasks are divided into four main categories:

1. Segregation, stabilization and staging of containerized material (bags, drums or containers).

2. Sampling, analysis, transportation and disposal.

3. Slag pile encapsulation.

4. Building security and bulk storage material isolation.

Task 1 - Container Segregation and Staging

Containers to be removed will be identified and segregated, in accordance with compatibility for recycle/disposal. Overpacking will be conducted if containers are damaged, deteriorated or found to be leaking.

Estimated Cost $ 18,926

Task 2 - Sampling, Analysis, Transportation & Disposal

Samples will be collected from containerized materials for analysis to determine waste classification for disposal or customer recycle.

Available site data indicate the materials to be removed are caustic, explosive, reactive and/or petroleum-based in nature. The disposal methods available include recycling, controlled detonation, landfilling and on-site treatment. The following cost estimate has been developed as a worst case scenario, namely non-recycle. A concentrated effort to recycle will be employed and therefore a small portion of the funds from this category will be expended.

Estimated Cost $ 143,286

Task 3 - Slag Pile Stabilization

A bituminous asphalt-based encapsulant will be applied to the four (4) slag piles present at the former smelting facility of the site. Prior to application, bulk slag material that has migrated will be gathered and repiled.

Estimated Cost $ 21,802

Task 4 - Building Security and Material Isolation

All openings to the buildings of the former smelting facility containing gross contamination and bulk quantities of hazardous materials will be closed and locked to minimize unauthorized visits. Precautionary measures to minimize release of the stored materials by localized flooding will be provided.

Estimated Cost $ 31,475

C. Total Project Costs

The estimated project cost for Phase II Removal Action is $519,235, of which $347,005 is for mitigation contracting. The cost breakdown is as follows:

COST SUMMARY

Mitigation Contracting Costs	$ 255,015
20 % Contingency	$ 51,003
Rounded Mitigation Contracting Costs	$ 306,000
Extramural TAT Costs	$ 51,200
Extramural Costs Subtotal	$ 357,200
15 % Contingency	$ 53,580
Rounded Extramural Total	$ 410,780
Intramural Costs	$ 80,800
Total Removal Ceiling Estimate	$ 491,580

NEW PROJECT CEILING

	Phase I Removal Action		Phase II Removal Action	
	Estimated	Actual	Estimated	Adjusted
ERCS	$ 56,000	$ 43,005	$306,000	$293,005
TAT	$ 18,000	$ 14,700	$ 51,200	$ 47,900
Cont.	$ 11,000		$ 53,580	$ 42,580
EPA	$ 27,000	$ 19,850	$ 80,800	$ 73,650
Total	$112,000	$ 77,555	$491,580	$457,135
Ceiling	$112,000			$457,135
Total Project Ceiling				$534,690

VIII. Project Schedule

Phase II Removal Action proposed for the NL site will be implemented following approval of the Action Memorandum. The schedule for completion of the project will consist of mobilization, container segregation and staging and contacting permitted disposal facilities and potential clients for recycling. In the interim, slag pile re-encapsulation and building security measures can be completed in a two-week period. The actual on-site activities might be 4-5 weeks and is due to the possibility of disposal/recycle problems. Site activities may be discontinuous; i.e., several mobilizations and demobilizations are anticipated.

IX. RECOMMENDATION

Based on the assessment of present conditions due to the presence of the hazardous materials and the criteria discussed in Section V of this document, posing a direct threat to the environment and the health and welfare of residents in the immediate vicinity of the site, I recommend approval of the proposed Phase II Removal Action detailed in this document. The estimated cost for implementation of mitigation contracting is $293,005, raising the project ceiling to $457,135. The total project ceiling is thus brought to $534,690. There are sufficient monies available in our current Advice of Allowance to fund this project.

Please indicate your approval and authorization of funding for the Phase II Removal Action at the NL Industries, Inc. Site, as per the current Delegation(s) of Authority by signing below.

Approval William J. Muszynski — Date 9/12/89
William J. Muszynski, P.E.
Acting Regional Administrator

Disapproval ______________________ Date __________
William J. Muszynski, P.E.
Acting Regional Administrator

cc: (after approval is obtained)

S. Luftig, 2ERR
K. Callahan, 2ERR-DD
R. Salkie, 2ERR-ADREPP
G. Zachos, 2ERR-RAB
G. Pavlou, 2ERR-ADEP
J. Frisco, 2ERR-ADRP
M. Randol, 2OEP
D. Karlen, 2ORC-NJSUP
R. Gherardi, 2OPM-FIN
S. Anderson, PM-214F (Express Mail)
T. Fields, OS-210
J. Trela, NJDEP
C. Moyik, 2ERRD-PS
L. Guarneiri, OS-210
J. Rosianski, 2OEP

200052

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

DATE: SEP - 8 1989

SUBJECT: Funding Request for a Phase II Removal Action for the NL Industries, Inc. Site, Pedricktown, Salem County, New Jersey ACTION MEMORANDUM

FROM: for Eugene Dominach, On-Scene Coordinator K Callahan
Removal Action Branch

TO: William J. Muszynski, P.E.
Acting Regional Administrator

Thru: for Stephen D. Luftig, Director K. Callahan
Emergency and Remedial Response Division

I. EXECUTIVE SUMMARY

Authorization is requested under CERCLA (as amended by SARA) to conduct a Phase II Removal Action at the NL Industries, Inc. (NL) site. In a memorandum dated May 30, 1989 the New Jersey Site Compliance Branch (NJSCB) requested the Removal Action Branch (RAB) to conduct additional removal activities at the NL site. The Phase I Removal Action, which was completed on May 31, 1989 at a cost of $43,005 for mitigation contracting, is detailed in Section III.

As part of the ongoing Remedial Investigation (RI), an inventory of raw and waste materials was conducted at the site. The inventory revealed, and a RAB site investigation on June 22, 1989 confirmed, the presence of highly reactive and hazardous materials, specifically metallic arsenic, sodium metal and powder, red phosphorus, flammables, water reactives, caustic soda, nitrates, gas cylinders, asbestos and a radioactive source. Phase II Removal Action will include the removal and disposal of these materials, as well as enhancement of building security and the re-encapsulation of the on-site slag piles. In addition, soil and tons of slag, lead oxide and lead oxide contaminated materials present on-site will be sampled and secured while their removal or recycle possibilities are being evaluated.

Phase II Removal Action, which is detailed in Section IV. It is estimated to cost $293,005 for mitigation contracting, of which the project ceiling is $457,135. Thus, the total project ceiling for Phases I and II of the Removal Action is $534,690.

II. BACKGROUND

A. Site Setting/Description

The NL site is located on Penns Grove-Pedricktown Road in Pedricktown (also called Oldmans Township), Salem County, New Jersey, as shown in Figure 1. The 46-acre site overlies the Cape May aquifer and is bordered by Oldmans Creek and Penns Neck Township. The Delaware River is approximately 1.5 miles north of the site.

The site is situated within an industrial park that includes Airco, B.F. Goodrich, Browning-Ferris Industries and the Tomah Division of Exxon. The site contains a former secondary-lead smelting facility and a closed hazardous waste landfill. A Conrail easement bisects the property, separating the landfill to the north from the smelting facility to the south.

B. Description of Operations

NL began operations at the site in 1972. The facility was engaged in the secondary smelting of lead from used automotive batteries. The batteries would be drained of sulfuric acid, crushed to separate plastic and rubber materials, and the lead recovered via a blast furnace process. A loose/dusty slag residue was generated as a waste product of the smelting process.

During the period when NL operated the smelting facility, NL was cited on 46 occasions by the New Jersey Department of Environmental Protection (NJDEP) for violations of the State air and water quality standards. In 1978 NJDEP required NL to replace its blast furnace. A rotary kiln was installed in its place, which reduced the number and amount of pollutants entering the air. NL ceased smelting operations at the site in May 1982. In October 1982, NL and NJDEP entered into an Administrative Order on Consent (ACO).

The facility was sold to National Smelting of New Jersey (NSNJ) in February 1983. NSNJ, National Smelting and Refining Co., Inc. (NSR), NL and NJDEP entered into an Amended Administrative Order on Consent that same month. NSNJ is a wholly-owned subsidiary of NSR. This order amended the ACO of October 1982, identifying which environmental obligations are the responsibility of NSNJ and which were the responsibility of NL.

NSNJ conducted smelting operations from May 1983 to January 1984. NSNJ, NSR and Standard Metals Corporation (which owns 50% of NSR) filed for bankruptcy in March 1984. In

September 1983 the site was placed on the National Priorities List. In July 1985, EPA assumed the lead from NJDEP for site investigation and remediation. NL entered into an Administrative Order on Consent with EPA in April 1986, whereby NL assumed responsibility for conducting an RI and Feasibility Study (FS), which is currently in the second round of sampling.

C. Chronology of Significant Events

1988 On June 29, at a public meeting held by EPA to present the scope of the RI/FS, local residents voiced their concerns that the former smelting facility was not completely fenced, that there were documented reports of trespassing, that nearby potable wells had not been sampled recently, and that the site perimeter was overgrown with tall vegetation and strewn with dumped trash.

On November 22, an Action Memorandum requesting funds for Phase I Removal Action to secure the site, erect hazardous waste warning signs and encapsulate the on-site slag piles was submitted for approval. Funding was approved on December 19.

1989 In February, a new fence was erected and the existing fence repaired, thus securing the perimeter of the smelting facility. The slag piles were encapsulated in April and the tall grass removed in May. Phase I Removal Action terminated on May 31.

Heavy rains in June and July caused concern for the effectiveness of the slag pile encapsulation, as well as surface runoff from the site possibly contaminating nearby potable wells.

Newspaper articles and inquiries by elected officials for current site status and future clean-up activities were requested.

On July 22, EPA collected water samples from 8 potable wells adjacent to the NL site and analyzed for pH and various heavy metals.

D. Hazardous Materials Present

All of the highly reactive and hazardous materials slated for removal are stored in the former smelting facility at the site. Metallic and powdered sodium and red phosphorus are stored in a locked concrete block storage area. A warehouse contains sodium nitrate, metallic arsenic, petroleum products, sodium hypochlorite, copper sulfate, caustic soda and potash. These materials are stored in bags and drums and are deteriorating due to the length of storage and the humid conditions in the warehouse. Releases and potential releases are probable.

Open drums, fiber packs and bulk quantities of lead bearing raw materials and lead oxide are present at the smelting facility, along with a conservative estimate of 2,000 tons of kiln slag. Sampling indicates that the slag largely contains iron oxide with trace quantities of antimony, cadmium, copper, selenium, tin, lead and zinc.

Significant quantities of lead-contaminated debris and lead contaminated filterhouse bags are also found at the former smelting facility.

E. National Priorities List

This site was placed on the NPL list in September 1983 and is currently ranked 135 out of 889 on the National List and 19 out of 100 in the State of New Jersey.

III. REMOVAL ACTIVITIES COMPLETED

A. Introduction

RAB completed Phase I Removal Action in which the immediate threat to the public health due to direct contact and the release or the threat of a release to the environment was mitigated. Removal activities were completed in accordance with Section 300.65(b)(2), 40 CFR §300.65(b)(2), of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

1. Installation and Repair of Chain Link Fence

A new chain link fence was installed along the southern boundary of the former smelting facility adjacent to the railroad easement that divides the site. The six-foot high fence joins an existing fence, thus completely enclosing the smelting facility. Additionally, all existing fence and gates in disrepair were repaired to minimize unauthorized access to the facility. Warning signs were installed along the entire fence perimeter.

2. Slag Waste Stabilization

A bituminous asphalt encapsulant was applied on the four (4) piles of slag waste material stockpiled at the smelting facility. The encapsulant was applied to provide a protective coating to the slag to minimize airborne dispersion of particulates and leaching of fines by precipitation.

3. Property Maintenance

High grass and weeds present in front of the facility along Pedricktown Road were cut to discourage trash dumping and to reduce the threat of a grass fire.

4. Potable Well Sampling

Water samples obtained from eight (8) potable wells in the vicinity of the site were collected to determine if they are contaminated with heavy metals. The wells sampled are located approximately 0.3 miles northwest of the facility along U.S. Route 130. Sampling was performed at the request of local officials. Results showed lead concentrations of 1 to 16 ppb, which is well below the MCL of 50 ppb lead.

B. Summary

The removal activities proposed in Section V of the December 19, 1988 Action Memorandum have been implemented and are completed.

Securing the former smelting facility limits access to unauthorized parties. Stabilization of the slag waste piles prevents gross migration of contaminants to the environment.

These actions addressed the immediate threat to the public health, welfare and the environment and contributed to the long-term cleanup goals for the site. The project ceiling appropriated for the initial activity was $112,000. The mitigation cost was $43,005, the extramural TAT cost was $14,700, and the intramural EPA cost was $19,850. The total expenditure was $77,555.

IV. Phase II REMOVAL ACTION FUNDING REQUEST

A. Introduction

EPA conducted additional inspections at the site during the months of June and July 1989, to assess the need for a Phase II Removal Action. The investigations were initiated to identify hazardous materials stored on-site, locate the origin of a red pigment found in surface-water runoff, and determine the effectiveness of the encapsulant covering the slag piles.

The site inspection verified the presence of highly reactive and hazardous materials identified in the RI inventory (refer to Appendix B). The stockpiled waste slag showed minor evidence of precipitation infiltration, as noticed in some red-colored surface water runoff.

The observations made during the site assessment indicate that the potential for the release of hazardous materials, and the leaching of hazardous substances from the slag piles pose an immediate threat to the public health, welfare and environment.

B. Hazardous Substances

Numerous containers, drums, bags and piles of highly reactive and hazardous materials are present at the former smelting facility at the site. They include sodium nitrate, waste oil products, asbestos, metallic arsenic, red phosphorus, metallic sodium, pressurized gas cylinders and a radioactive source. A list of the materials deemed to pose an imminent and substantial hazard is provided in Table 1. The majority of the listed materials is stored in the facility warehouse; however, small quantities of the hazardous substances are also stored in a concrete block building situated adjacent to the warehouse. The immediate hazards associated with these materials are the explosive, flammable, reactive, caustic and/or carcinogenic characteristics associated with these materials.

C. Slag Waste Piles

Waste slag is stockpiled outdoors at four (4) locations on the former smelting facility at the site. Initial sampling of the slag indicates iron oxide as the primary constituent, with trace levels of heavy metals. Since the slag is exposed to the elements, precipitation could damage the encapsulation and the resultant discharge could impact adjacent surface areas and groundwater.

To minimize precipitation infiltration and wind transport, a second coat of encapsulant will be applied to the slag piles. This coating will provide a protective layer over thinly covered or exposed areas.

D. Storm Water Run-off

During periods of heavy precipitation, stormwater runoff from the former smelting facility was identified to be red in color. The source of the red coloration appears to originate from the slag piles and from contaminated areas within the smelting facility. The absence of a storm drainage system in the facility causes the area to flood during and after heavy precipitation. NL did not install a drainage system because it could apparently collect precipitation for processing, thereby reducing costs for procuring municipal water. With the facility closed down for many years, areas of the facility are flooded on a regular basis, and as a result, the slag fines are entrained and dispersed via the receding water.

A sampling program is required to determine if hazardous substances in the slag piles have contaminated surface soils and groundwater by surface run-off, and will be addressed in a future assessment. Samples will be collected from water run-off and soils from on-site drainage paths and off-site locations to determine if horizontal and vertical contamination exists.

E. Recycle of Stored Materials

An attempt to recycle all materials will be made in lieu of exercising permanent disposal at permitted disposal facilities. Sampling, overpacking and containerization may be necessary before the transfer of these material can be made.

F. Building Security

All doors, windows and openings to the buildings at the former smelting facility will be closed and locked to minimize unauthorized access to the interior areas.

V. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

The materials and conditions present at the facility as discussed in Section III meet the following criteria for removal action under Section 300.65(b)(2) of the NCP:

a. Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations, animals, or food chains [300.65(b)(2)(i)];

Although provisions have been implemented to discourage unauthorized entry to the former smelting facility, a forced entry could subject trespassers to the hazardous materials present there.

b. Actual or potential contamination of drinking water supplies or sensitive ecosystems [300.65(b)(2)(ii)];

Surface runoff carrying contaminants from the waste piles at the smelting facility may be migrating off-site threatening the potable water wells and surface water supplies. The contaminants present in the surface runoff may be in direct contact with the general public, animals and food sources.

c. Hazardous substances or pollutants or contaminants in drums, barrels, tanks or other bulk storage containers that may pose a threat of release [300.65(b)(2)(iii)];

Drums containing caustic and reactive materials are present within the facility buildings. These drums pose a threat of direct contact should they rupture and release to the environment.

d. Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released [300.65 (b)(2)(v)];

The lead oxide, lead oxide contaminated debris and the slag piles at the smelting facility are known hazardous substances and are exposed to the environment. Contaminants from these materials are potentially being released into the environment via surface runoff.

e. Threat of Fire or Explosion; [300.65(b)(2)(vi)];

Drums containing red phosphorus, metallic sodium and powdered sodium are present in the storage building at the smelting facility. Additionally, seven metal cylinders are located adjacent to the exterior wall of the building. The contents of the cylinders are unknown.

- o Red phosphorus is a shock sensitive compound which burns violently, producing highly toxic phosgene gas.
- o Metallic sodium reacts violently when exposed to water.
- o Cylinders typically contain pressurized gas. Since the contents are under high pressure an explosion can result if they are punctured.

The lead oxide waste material is found within piping, drums, tanks, piles, and the process and ventilation equipment in the decasing and refining buildings. Three (3) samples obtained from these wastes were analyzed for HSL inorganics. The concentration of lead and iron ranged from 101,000 to 437,000 and 10,500 to 28,300 ppm, respectively. Cadmium, arsenic, aluminum, magnesium, and antimony were also found in moderately high concentrations.

Wipe samples from equipment and the interior of buildings showed high concentrations of lead, iron, cadmium, nickel and copper, as well as low concentrations of TCL metals, such as arsenic, cobalt and vanadium.

The surface water on-site contains hazardous substances including lead and cadmium, in concentrations detrimental to the public health and the environment.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. EXEMPTIONS FROM STATUTORY LIMITS

Continued Response Actions are Otherwise Appropriate and Consistent with the Remedial Action to be Taken

This project was initiated on verbal approval to prevent unauthorized entry and pilferage of copper wire from the contaminated buildings and grounds. Additionally, the relocation of large quantities of stored hazardous materials is required to eliminate off-site discharges of heavy metal contaminated waste.

A. Consistency

No responsible parties are currently taking timely action to remove or relocate the stored hazardous materials, hence, this activity will be consistent with a long-term remedial and enforcement action.

B. Appropriateness

This action by removing the copper wire will prevent unauthorized entrances that repeatedly is subjecting the intruders to direct contact and inhalation of hazardous substances. In addition, the relocation of the stored hazardous materials will eliminate off-site discharges of hazardous materials. Since conditions at the site meet the CERCLA section 104(c) consistency exemption the proposed action qualifies for a 12-month exemption.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The proposed scope of work for Phase III of this project includes:

- o Removal of the copper main feeder cable from the exterior transformers to inside the building motor control centers.
- o Removal of the copper wire from the motor control centers to the equipment.
- o The removed copper cable, wire and electrical switchgear will be stored at the Edison EPA facility, pending decision on whether any creditors or PRP's may have claim to it. If not claimed, the material could be sold and the money eventually used to finance Superfund cleanup costs at the site.
- o Relocating the lead contaminated waste stored in piles and deteriorated drums to the covered and partially enclosed area adjacent to slag pile "B".
- o Investigate installation of an alarm system on the fence and energization of area lighting inside the plant.
- o Provide guard security at the site until the valuable materials are removed from the site.
- o These actions will eliminate vandalism of the site and help prevent additional contaminant run-off from the unsecured waste areas.

2. Contribution to remedial performance

The current PRP, NL Industries is financing an RI/FS that is nearing finalization. Four PRPs or potential creditors of NJ Smelting have not responded in a timely manner for remediation of the site but are being noticed by Regional Council of EPA's intent to remove the remaining copper wire and cable from the site to eliminate future pilferage.

The proposed material relocation activity by EPA will prevent further contamination of the soil and groundwater. Removal of the copper will prevent direct contact to humans and the profit from its sale will be credited to the superfund removal program.

3. Description of alternative technologies

No alternative but the physical removal of the copper products to prevent pilferage exists.

The New Jersey Compliance Branch has engaged an Environmental Contractor to prepare a Focus Feasibility Study to provide the Remedial Action Alternatives available for cleanup of the site waste streams. An EPA Removal Action Feasibility Study listing potentially feasible technologies has been made available to NJCB for contractor use.

4. EE/CA

Because of the time critical nature of this Removal Action this section does not apply.

5. Applicable or relevant and appropriate requirements(ARARs)

Federal

Federal ARARs determined to be practicable for the site are the Clean Water Act, Resource Conservation and Recovery Act(RCRA), Toxic Substances Control Act and the Occupational Safety and Health Act (OSHA).

State

State ARARs will be met by relocation of the waste to a secured area to prevent future off-site discharge of heavy metals contaminants, exceeding state standards, to soils, surface water and ground water.

6. Project Schedule

The project can be initiated within two weeks after approval and is expected to be completed within 2 months (see Figure D, page 20).

<u>B.</u> <u>Estimated Costs</u>

1. <u>Regional Allowance Costs</u>

Total Cleanup Contractor Costs (ERCS)	$129,620
Contingency (20%)	<u>$ 25,925</u>
Subtotal Mitigation Costs	$155,545

2. <u>Other Extramural Costs Not Funded From The Regional Allowance</u>

VIII. OUTSTANDING POLICY ISSUE

There is a issue whether any creditors may have claims to the copper wire or other property at the site. This issue is now being investigated by ORC in conjunction with the Department of Justice.

IX. ENFORCEMENT

Future plans for EPA are to continue searching out and reaching agreements with PRPs to provide remediation funding for site clean-up. Secondly, to obtain the escrow account in the amount of $600,000 that NL Industries gave to NJDEP to finance site cleanup.

X. RECOMMENDATION

Approval of the proposed removal action, as detailed and justified above, is recommended. The proposed removal action contributes to the efficient performance of any long term remedial action at the site. Under 40 CFR 300.400 of the NCP, a removal action is appropriate at this site due to the existence of:

1) Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations, animals, or food chain [300.415(b)(2)(i)];

2) Actual or potential contamination of drinking water supplies or sensitive ecosystems [300.415(b)(2)(ii)];

3) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate [300.415(b)(2)(iv)];

4) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released [300.415(b)(2)(v)];

5) The availability of other appropriate Federal or state response mechanisms to respond to the release [300.415(b)(2)(vii)];

6) Other situations or factors which may pose threats to public health or welfare or the environment [300.415(b)(2)(viii)].

The estimated new project ceiling of the NL Site Removal Funding Request is $695,565 of which $400,335 is from the Regional removal allowance. This request is for an estimated increase in mitigation contracting of $129,620.

Sufficient funding is available in our current Advice of Allowance to finance this project.

Your signature below approves the 12-month exemption and ceiling increase of $160,875 for the NL site according to current Delegation of Authority.

Approved: _______________ Date: 1/29/97
Constantine Sidamon-Eristoff
Regional Administrator

Disapproved: _______________ Date: _______________
Constantine Sidamon-Eristoff
Regional Administrator

cc: (after approval is obtained)
- C. Sidamon-Eristoff, 2RA
- R. Caspe, 2ERR
- R. Salkie, 2ERR-ADREPP
- G. Zachos, 2ERR-RAB
- J. Frisco, 2ERR-ADNJP
- J. Marshall, 2OEP
- R. Borsellino, 2ERR-NJRAB
- D. Karlen, 2ORC-NJSUP
- R. Gherardi, 2OPM-FIN
- S. Anderson, PM-214F
- S. Luftig, OS-210
- T. Greir, OS-210
- J. Trela, NJDEP
- C. Moyik, 2ERRD-PS
- J. Rosianski, 2OEP
- T. Mignone, TATL

NL INDUSTRIES

APPENDIX A

TABLE 1 SUMMARY OF CHEMICAL CONSTITUENTS IN DIFFERENT WASTE STREAMS

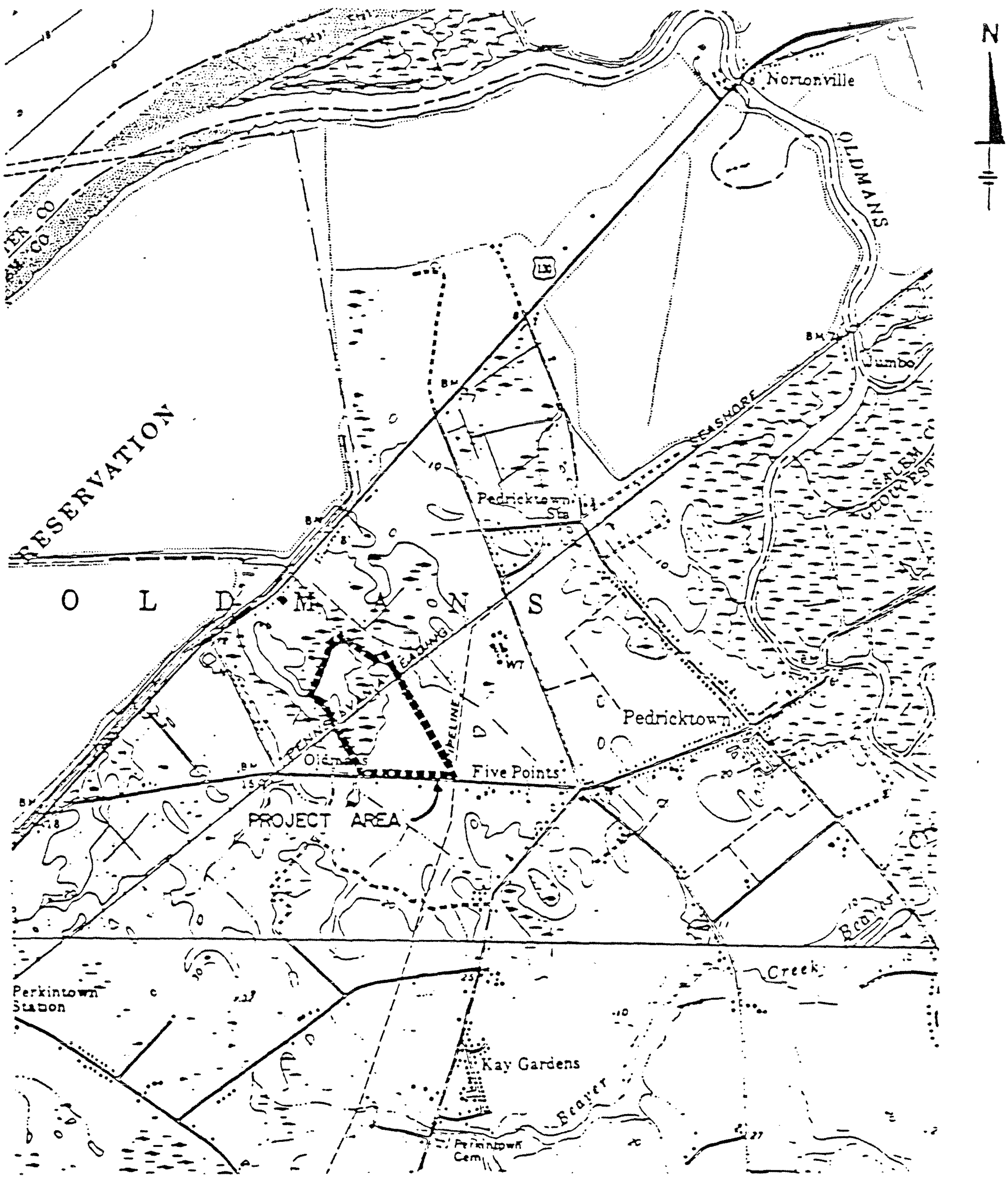
NL Industries, Pedricktown, New Jersey

HSL INORGANICS		SLAG PILE * A	SLAG PILE * B	SLAG PILE * C	SLAG PILE * D	LEAD OXIDE * PILE	OTHER WASTE * AREA	DECONTAMINATION * BUILDING WIPE SAMPLES	STANDING ** WATER SAMPLES
CAS No.	PARAMETER	MIN - MAX	MIN - MAX	MIN - MAX	MIN - MAX	MIN - MAX	MIN - MAX	MIN - MAX	MIN - MAX
7429-90-5	Aluminum	2180 - 20800	1010 - 5100	5000 - 8200	2370 - 9800	575 - 1210	15.4 - 16000	0.024 - 32.7	58.7 - 832.0
7440-36-0	Antimony	67.7 - 3040	123 - 19000	500 - 3150	47.4 - 2100	1490 - 2790	1.3 - 594000	0.0084 - 56.2	33.0 - 2080.0
7440-38-2	Arsenic	116 - 3580	224 - 842	877 - 1380	178 - 2910	293 - 614	0.8 - 38000	0.0009 - 17.4	8.0 - 80.0
7440-39-3	Barium	12.8 - 1560	13 - 474	742 - 2590	301 - 2930	10 - 220	0.15 - 11000	0.014 - 1.4	37.0 - 66.0
7440-41-7	Beryllium	1.5 - 6.9	2.5 - 7.2	4.4 - 10	1.2 - 9.3	0.55 - 0.65	0.011 - 14.9	0.0007 - 0.036	3.0 - 3.0
7440-43-9	Cadmium	39.5 - 359	22.4 - 271	162 - 1460	42.4 - 549	205 - 650	0.97 - 11300	0.0012 - 3.7	11.8 - 823.0
7440-70-2	Calcium	1560 - 8520	2510 - 14100	6020 - 8950	4270 - 14100	1550 - 3150	13 - 146000	0.063 - 91.2	3790.0 - 25900.0
7440-47-3	Chromium	51 - 640	165 - 1150	342 - 1440	218 - 7240	140 - 151	0.95 - 20000	0.0024 - 4.6	8.0 - 14.1
7440-48-4	Cobalt	11.1 - 268	33.5 - 300	29.1 - 96.4	8.1 - 103	4.3 - 9.8	0.07 - 183	0.0049 - 0.13	8.0 - 217.0
7440-50-8	Copper	430 - 8590	1350 - 7110	1410 - 4060	408 - 3090	132 - 674	2.1 - 14900	0 - 17	21.9 - 770.0
7439-89-6	Iron	32800 -167000	68000 -186000	129000 -264000	10000 -254000	10500 - 28300	141 - 349000	0.46 - 677	89.4 - 2420.0
7439-92-1	Lead	13500 -193000	49600 -252010	85700 -226000	8950 -151000	101000 -437000	531 - 605000	0.88 - 552	160.0 - 4390.0
7439-95-4	Magnesium	612 - 13500	319 - 3860	791 - 2590	834 - 10100	253 - 1020	3.5 - 13900	0.24 - 9.9	1120.0 - 5170.0
7439-96-5	Manganese	149 - 1610	64.3 - 920	935 - 2030	237 - 1640	60.1 - 210	0.96 - 3290	0 - 5.5	14.7 - 328.0
7439-97-6	Mercury	0.065 - 0.71	0.069 - 0.76	0.08 - 0.26	0.072 - 0.16	1 - 1.6	0.034 - 64	0.0001 - 0.019	0.2 - 0.5
7440-02-0	Nickel	84.8 - 1070	137 - 635	538 - 1190	112 - 2620	138 - 342	1.4 - 3780	0.0087 - 5.2	14.0 - 343.0
7440-09-7	Potassium	2650 - 68400	5360 - 61800	17500 - 46300	6530 - 63700	11200 - 44800	101 - 66000	0.073 - 70	3160.0 - 10800.0
7782-49-2	Selenium	0.83 - 2.4	0.63 - 1.1	1.1 - 1.3	0.81 - 1.5	0.73 - 0.86	0.087 - 43.5	0.0007 - 0.084	5.0 - 50.0
7440-22-4	Silver	2 - 8.3	3 - 12	6.9 - 11	2.4 - 15	2.7 - 8.9	0.12 - 95	0.0024 - 0.37	7.0 - 9.0
7440-23-5	Sodium	2370 - 67500	5140 - 63100	19700 - 48700	5930 - 63900	12800 - 48600	61.9 - 69400	0.3 - 77.9	3430 - 698000
7440-28-0	Thallium	0.83 - 3.7	0.9 - 1.1	1.1 - 2.7	0.81 - 1.5	0.8 - 0.86	0.033 - 7.4	0.0009 - 0.003	6.0 - 6.0
7440-62-2	Vanadium	96.4 - 633	295 - 460	569 - 1630	117 - 554	9.4 - 17.3	0.61 - 785	0.0049 - 0.35	12.0 - 20.4
7440-66-6	Zinc	567 - 6830	1700 - 8420	1270 - 5680	696 - 7430	484 - 1430	25 - 69600	0.036 - 204	72.0 - 7230.0
	Cyanide								

* UNITS = mg/kg

** UNITS = ug/liter

APPENDIX B



NOTE: Map adapted from U.S.G.S. Marcus Hook, Pa. - Penns Grove, N.J. Quadrangles

WESTON — SPILL PREVENTION & EMERGENCY RESPONSE DIVISION	EPA PM Eugene Dominach	FIGURE A
In Association with ICF Technology Inc., C.C. Johnson & Associates, Inc., Resource Applications, Inc., Geo/Resource Consultants, Inc., and Environmental Toxicology International, Inc.	TAT PM V. Reddy/J. Menfreda	NL Industries Pedricktown, NJ

DEC 19 1988 UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

2U0070

DATE:

SUBJECT: Funding Request for a Removal Action; NL Industries Inc. Site, Pedricktown, Salem County, New Jersey - ACTION MEMORANDUM

FROM: Eugene G. Dominach, On-Scene Coordinator
Response and Prevention Branch

TO: Stephen D. Luftig, Director
Emergency and Remedial Response Division

I. EXECUTIVE SUMMARY

Authorization is requested for funding under CERCLA (as amended by SARA) to perform a removal action at the NL Industries, Inc. (NL) site, located on Penns Grove-Pedricktown Road in Pedricktown (also called Oldmans Township), Salem County, New Jersey. The EPA Site Compliance Branch (SCB), in a memorandum dated July 1, 1988, requested the Response and Prevention Branch to perform a removal action at the site, which encompasses 46 acres and includes a closed on-site landfill. The site overlies the Cape May aquifer. Oldmans Creek, a tributary of the Delaware River used for recreational purposes, borders the area to the north and east. The Delaware River lies to the north and west of the site. Penns Neck Township is located to the south. The site is shown in Figures I and II on pages 9 and 10.

In 1972, the facility began operations recycling lead from spent automotive batteries. The batteries were drained of sulfuric acid, crushed, and the separated rubber and plastic parts buried in an on-site landfill. The lead parts were processed via a secondary smelting operation using a blast furnace (a furnace in which combustion air is mixed with exhaust gases and released to the atmosphere) and a reverberatory furnace (no direct contact between the fuel and the charge). A loose/dusty residual slag from the smelting process was stockpiled on site in outdoor bins. It is estimated that 2000 cubic yards are stored on site.

Between 1973 and 1980, the New Jersey Department of Environmental Protection (NJDEP) cited NL with 46 violations of the state air and water regulations. Water pollution violations were primarily directed toward the battery storage area and the on-site landfill. Soil contamination citations resulted from the battery and slag storage areas. The blast furnace released ferrous sulfate which caused black spots to appear on the aluminum siding of homes, automobiles, and, etched concrete. NL voluntarily cleaned and resided these homes and painted automobiles. NJDEP conducted an air monitoring program that defined air-borne quantities of lead, cadmium, antimony, and ferrous sulfate produced by the smelting process. The levels exceeded the facility's operating permits. The furnaces were replaced in 1978 by a rotary kiln and dust collection equipment to filter the exhaust gases thereby decreaseing atmospheric contamination and complying with NJDEP air quality standards.

The sampling in 1976 by the Salem County Department of Health (SCDOH) of on-site surface water and nearby residential potable water wells confirmed the presence of hazardous substances, including lead and cadmium, in concentrations detrimental to the public health and environment. NL in 1977 cleaned up the battery storage area and installed a liner to contain acid leakage from the batteries. In 1980, following a NJDEP order, NL constructed a lined (membrane & asphalt) landfill to replace the original unlined pit. NL entered into an Administrative Consent Order (ACO) with NJDEP in 1982 to conduct a remedial program. That same year the site was placed on the National Priorities List (NPL).

Sale of the property in 1983 to National Smelting of New Jersey, Inc. (NSNJ) resulted in NL, NSNJ, and NSNJ's parent company, National Smelting Refining Co., Inc., signing an Amended ACO with NJDEP with defined responsibilities. NSNJ ceased operation in 1984 and declared bankruptcy. The bankruptcy case was dismissed in October, 1985. NL signed a consent order in 1986 with EPA whereby NL has assumed responsibility for conducting a long term investigation at the site.

A public meeting was held on June 29, 1988, at which time EPA outlined the scope of the RI/FS to be conducted at the site. Local residents presented their concerns regarding the facility at this time. Said concerns included the need for a perimeter fence to limit public access, the threat of fire, and the contamination of shallow residential potable water wells. This Action Memorandum will address the need to secure the site by repairing the existing fence, erecting an additional 900 feet of chain link fence, posting warning signs, and stabilizing the slag piles.

The estimated cost of these activities is $112,000 of which $56,000 is for mitigation contracting.

II. BACKGROUND

A. Site Setting/Description

The NL site is an abandoned secondary lead smelting facility situated on 46 acres of land, approximately 1.5 miles from the Delaware River in Pedricktown, Salem County, New Jersey. The defunct plant is located in an industrial park in a rural area. The following major corporate entities are found in the area: Airco, B.F. Goodrich, Browning-Ferris Industries and the Tomah Division of Exxon. Railroad tracks, owned by Conrail, run through the property separating a closed permitted landfill to the north from the smelting operations area to the south. Originally (1972), the plant operations utilized the typical blast furnace and reverberatory furnace for smelting and kettles for refining lead. In 1978, NJDEP required NL to replace the blast furnace with a rotary kiln to reduce airborne levels of lead, cadmium, chromium, antimony, and ferrous sulfate.

The landfill operated on site by NL received the plastic and hard rubber case parts of the batteries as well as furnace and kiln slag. It also was the disposal site for the contaminated surface soil removed by NL as per the terms of an October 6, 1982 ACO reached between NL and NJDEP.

B. Chronology of Significant Events

1972 NL began smelting operations.

1973 Violations of state air and water pollution regulations begin, the total number of citations will eventually reach 46.

1976 NL voluntarily cleaned and re-sided several houses and repainted a number of automobiles in Pedricktown.

1977 Under a NJDEP order, NL cleans up the battery storage area and installs a liner to contain acid leakage from the batteries.

1978 NJDEP requires NL to replace its blast furnace with a rotary kiln furnace to reduce airborne emissions.

1980 NL constructs a lined landfill to replace the original unlined landfill used for the disposal of by-products.

1982 NL terminates lead reclamation on May 27.

On October 6, NL and NJDEP enter into an ACO requiring NL to conduct a remedial program which includes surface soil removal, prevention of surface run-off, preparation of closure and post-closure plans for the landfill, installation and sampling of groundwater monitoring wells, and development and installation of a groundwater abatement system.

In December the site is placed on the NPL.

1983 On February 10, NL, NSNJ, National Smelting and Refining Co., Inc., and the NJDEP enter into an amended ACO to delineate and distribute the environmental obligations specified in the ACO. NJDEP receives $600,000 from NL as a condition of the amended ACO.

On February 24, NSNJ takes possession of the property and in May begins smelting lead.

1984 NSNJ files for bankruptcy under Chapters 11 and 7 on March 5th and 27th, respectively.

Until June 15, National Bank of Georgia, trustee for the site bond holders, maintained the environmental personnel on site for landfill maintenance.

On June 18, NL voluntarily entered the site to maintain the landfill.

1985 Site lead responsibility transferred from NJDEP to the EPA.

1986 A consent agreement is signed on April 25 between NL and EPA. NL assumes responsibility for conducting the RI/FS.

1987 The RI/FS Work Plan is approved on June 17.

1988 A Site Operations Plan for the RI/FS is prepared and approved on May 26.

On June 29, in a public meeting during which EPA presented the scope of the RI/FS local residents voiced their concerns that (1) the site is not completely fenced and there are documented reports of trespassing; (2) residential wells have not been sampled in the last one to two years; (3) based on the results of a previous well analysis, one resident was advised by the SCDOH not to consume the water; (4) certain areas along the site perimeter are overgrown with tall vegetation creating a concern as a potential fire hazard; (5) trash is being dumped along the outside perimeter; and (6) there have been building break-ins and thefts. Some windows have been boarded up following these events.

C. Quantities and Types of Substances Present

Metallic sodium, red phosphorus and arsenic are stored in a concrete block, locked storage area. A warehouse is reported to contain drummed quantities of raw materials, namely; caustic soda, sodium nitrate, sulfur, lime, charcoal and potash. In addition, the following metals are presently stored on site; aluminum, antimony, bismuth, cadmium, calcium/aluminum mixture, copper, selenium, tin, tin/aluminum mixture, and zinc. Some of these chemicals are highly toxic, caustic, flammable, or carcinogenic. For example, sodium metal is a strong caustic irritant which, if exposed to air or water, can readily ignite. Red phosphorus can ignite spontaneously or can react with water vapor and oxygen to form highly toxic phosphine gas.

Open drums and deteriorating fiber packs of lead bearing raw materials are present on site in an outside area. An estimated 2,000 tons of kiln slag, containing primarily iron compounds but allegedly also small quantities of heavy metals, is in exterior bins exposed to the elements. During periods of heavy precipitation, rain water can become contaminated, overflow the paved areas onto the surrounding soil potentially migrating and contaminating the groundwater. Two silos, one containing soda ash and the other petroleum coke, are also present.

Significant contamination of the rotary kilns and baghouses with lead oxide dust, as well as lead contamination of the soils in and adjacent to the site, has been documented.

D. National Priorities List Designation

This site was placed on the National Priorities List in December, 1982.

III. THREAT TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT

When NSNJ ceased smelting operations in 1984, the site was abandoned. Much operating, office and laboratory equipment were left behind, attracting trespassers. Many acts of vandalism and theft have since been reported. In fact, during the preliminary site assessment by the Response and Prevention Branch on January 28, 1988, the NL representative noted evidence of a recent break-in at the office building. This was reported to the State police while the EPA representatives were on the premises.

Conditions at the NL Industries, Inc. Site meet the following criteria for a removal action under the NCP Section 40CFR 300.65(b)(2):

a. Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations, animals, or food chain [300.65 (b)(2)(i)]:

The threat of direct contact for trespassers is high, especially if they enter buildings containing hazardous materials.

b. Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release [300.65 (b)(2)(iii)]:

Though some of the drums and other bulk storage containers contain hazardous substances, they are relatively stable and are not known to be discharging into the environment at this time. They may have discharged in the past and therefore the major threat they pose is direct contact.

c. Weather conditions that may cause hazardous substances to migrate or be released [300.65 (b)(2)(v)]:

The slag heaps, which contain hazardous substances, are stored outside and exposed to the elements. Slag particulates are being discharged into the environment via surface run-off and wind transport.

d. Threat of fire or explosion [300.65 ((b)(2)(vi)]:

The presence of phosphorus and metallic sodium pose a threat of fire or explosion. Though stored in a locked fire-proof room in the warehouse, these chemicals can possibly be tampered with by unauthorized personnel.

IV. ENFORCEMENT

SCB personnel are overseeing the RI/FS work now on going. SCB personnel attended a public meeting on June 29, 1988, at which time EPA presented the scope of the RI/FS for the site. Various complaints were made by the local residents, including trespassing by children, onto the partially fenced site.

NJDEP has informed EPA that EPA can utilize monies from a NJDEP special account for removal/remedial work at the site. This account contains $600,000 plus interest which NJDEP obtained from the Standard Metals Corporation as a result of recent bankruptcy proceedings. Standard Metals owned at the time fifty percent of National Smelting & Refining Co., Inc., which is the parent company of NSNJ.

The Office of Regional Counsel is looking into the possibility of utilizing this NJDEP fund to reimburse EPA for the entire costs of the proposed removal action.

V. PROPOSED PROJECT AND COSTS

A. Objective of the Project

The objective is two-fold; secure the former production area of the site, and temporarily stabilize the slag heaps.

A six foot chain link fence will be constructed along the southeast side of the railroad tracks that bisect the site. This new fence will join the fence that already exists along the other three sides to fully enclose the former production area. Any holes in the existing fence will be mended, and large openings in the gates will be made smaller so that small children cannot slip through.

Along the entire perimeter of the fence, warning signs will be installed which will read "WARNING - HAZARDOUS WASTE AREA - UNAUTHORIZED PERSONNEL KEEP OUT."

Securing the former production area of the site should reduce access to the public and to animals, and thereby reduce the threat of direct contact to hazardous materials present there.

An encapsulant or a dust stabilization material such as sodium silicate, commonly called water glass, will be sprayed on the slag heaps. The material soon solidifies, providing a protective cover over the slag heaps.

This covering should reduce the migration of hazardous substances via wind transport and surface run-off.

B. Project Estimated Costs

The estimated costs for the action required to restrict access to the site and reduce the threat of direct contact are as follows:

C. Project Schedule

Erection of the fence and posting of signs is expected to begin within 2 weeks after the Action Memorandum is approved. It is anticipated that the fence installation, securing of the windows and doors, and slag pile stabilization will require 15 working days to complete, weather and the availability of fencing contractors permitting.

VI. RECOMMENDATION

Based on the conditions at NL Industries Inc., outlined in Section III., I recommend your approval of the proposed removal action described herein to restrict access to the site and reduce the risk to the surrounding residents. The estimated cost of this project is $112,000 of which $56,000 is for mitigation contracting. There are sufficient monies in our current Advice of Allowance to fund this project.

Please indicate your approval and authorization of funding, per current delagation(s) of authority, by signing below.

Approval Steph D. Luftig Date 12/19/8

Disapproval ______ Date ______

cc: (after approval is obtained)

W. Muszynski, 2DRA
R. Salkie, 2ERR-RPO
G. Zachos, 2ERR-RP
B. Sprague, 2ERR-RP
R. Basso, 2ERR-SC
D. Karlen, 2ORC-NJSUP
J. Frisco, 2ERR-NJRA
M. Randol, 2OEP
R. Gherardi, 2OPM-FIN
S. Anderson, PM-214F (Express Mail)
T. Fields, WH-548B
J. Gaston, NJDEP

APPENDIX B

RI/FS MATERIAL INVENTORY

Table
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	S	001	Lime	Bag		3500	labled: Georgia Comp.; 60-70 bags.
	S	002	Lime	Bag		10000	labled: Warner Comp. "Bell Lime"; 190-200 bags.
	S	003	Gran. Charcoal	Bag		2500	45-50 bags
	S	004	Gran. Charcoal	Bag		500	10 bags
	S	005	Cement	Bag		3000	labled: H-W light weight castable refactory cement; 24-30 bags.
	S	005-02	Cement	Bag		3000	Note in sm. strg. bldg.: H-W lgt wt refactory cement; Amt 24-30 bags.
	S	006	Cement	Drum	0.09	212	labled: A.P. Green; five 3 gal. drums.
	S	007	Saw Dust	Bag		25	60-70 bags.
	S	008	Lime	Bag		3750	labled: G.P. Corp.; 70-80 bags.
	S	009	Sand	Bag		100	20-25 bags.
	S	010	BHB	Drum	0.45	3186	lead oxide, one box 100% full and one box 50% full.
	S	011	Cement	Pail		400	four pails of mortor cement.
	L	012	Petroleum	Drum	0.60		labled: Hydroil Hvy. Medium T23H3-2, two drums of hydrolic fluid.
	S	013	Lime	Drum	0.90	2124	caustic potash, three drums.
	S	014	Lime	Drum	4.80	11327	caustic soda (dry), 16 drums
	S	015	Sodium Nitrate	Bag		11500	110-120 bags.
	S	016	Gran. Charcoal	Drum	0.15	506	oil laden charcoal; one drum 50% full.
	L	017	Paint	Pail	0.03		one pail of no slip floor paint, 100% full.
	L	018	Petroleum	Drum	0.30		labled: Mobil Temp. 78 Grease, 100% full.
	L	019	Petroleum	Drum	0.30		labled: Mobil TAC 77 Open Gear Lude; 100% full.
	L	020	Petroleum	Drum	0.30		labled: Exxon NUTO H-32; one drum; liquid, 100% full.
	S	021	Grout	Bag		300	labled: BC Non-shrink Metallic grouting compound, three bags.
	L	022	Petroleum	Pail	0.03		suspected hydrolic fluid; four pails 100% full. 20W oil
	L	023	Petroleum	Pail	0.12		suspected hydrolic fluid; two pails zero%, four 100% full. 50W oil
	L	024	Petroleum	Drum	0.10		labled: Mobil Oil Delvak Motor Oil 20-20 W; one dr. 33% full.
	L	025	Petroleum	Pail	0.03		liquid degreaser; one pail 100% full.
	L	026	Fungicide	Pail	0.14		labled: ONOX; 24 one gal. containers 100% full.
	S	027	Magnitite	Bag		100	two broken bags.
X	S	028	?	Drum	0.30		one drum 100% full, unknown white globular crystalline solid.
	S	029	Lead Oxide	Drum	0.42	2973	three 35 gal. drums 90% full, Litharge.
	S	030	Arsenic	Pail	0.03	288	Metallic Arsenic; one pail 20% full.
	S	031	BHB	Drum	0.90	6372	lead oxide, three drums 100% full.
	S	032	Coral Bond	Pail		2970	labled: CORAL BOND; 33 pails of solid material 80-100% full.
	S	033	BHB	Drum	1.50	10619	lead oxide, five drums 100% full.
	S	034	Copper Sulfate	Drum	1.00	4248	five drums 100% full.
	S	035	Lead Oxide	Drum	7.00	49557	labled: Litharge, 30-35 drums 100% full, solid.
	S	036	BHB	Box	2.40	405	four boxes of UNUSED bag house bags.
	?	037	OTE BB T5L9-2	Drum	0.30		labled: OTE BB T5L9-2; one drum of an unknown material.
	S	038	Sulfur	Bag		12500	labled: Royla Company; approx. 250 bags 100% full.
	S	039	Chlorine	Drum	0.06	113	labled: HTH; one drum 30% full; solid.
	L	040	Petroleum	Pail	0.00		one drum of cutting fluid 10% full.
	L	041	Petroleum	Drum	0.15		labled: UNIREX No. 2 Grease, one drum 50% full.
	L	042	Petroleum	Drum	0.09		labled: Emerial Oil "Lube Oil Steam", one drum 30% full.
	L	043	Petroleum	Pail	0.05		labled: HALPEN ENGINEERING LIMITED; two 5 gal. grease pails 90% full.
	S	044	Lime	Drum	0.81	1911	three drums 90% full.
	S	045	Cement	Bag		5000	labled: Snow Shoe Company, JH Brant; 50 bags of fire clay mortor 100%.

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Table
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	L	046	Petroleum	Drum	0.27		no identifying marks; one drum 90% full.
	S	047	Dross	Drum	0.15	1517	one decomposed drum 50% full.
	S	048	Dross	Drum	0.30	3034	two drums 100% full.
	S	049	Iron	Pail	0.02	131	one pail of a black powder material 50% full.
	S	050	Iron	Bag		800	labled: Magnifloat; magnitite, iron bearing sub., 8 partially broken bags.
	S	051	BHB	Drum	33.00	233626	lead oxide, 110 drums 100% full.
	S	052	Dross	Drum	0.75	7585	two drums 100% full, one drum 50% full.
	S	053	Dross	Drum	0.55	5563	three decomposed drums of 30%, 50% & 100% full.
X	S	054	Dross(yellow)	Drum	1.20	12136	four drums 100% full.
X	S	055	Dross(yellow)	Drum	0.60	6068	two drums 100% full.
	S	056	Dross(yellow)	Drum	0.30	3034	one drum 100% full.
	S	057	Dross(yellow)	Drum	0.30	3034	four drums 70-100% full.
	S	058	Dross(yellow)	Drum	0.81	8192	three drums 90% full.
	S	059	Dross	Drum	0.90	9102	three drums 100% full.
	S	060	BHB	Drum	19.50	138051	lead oxide, 65 drums 100% full.
	S	061	Dross(yellow)	Drum	0.15	1517	one drum 50% full.
X	S	062	Dross(yellow)	Drum	0.20	2022	unknown granular material; one drum 50% full.
	S	063	Dross	Slag pot	1.00	10114	one pot containing lead material 100% full.
	L	064-1	Water	Lead mold	0.50	843	mold containing water only.
	L	064-2	Water	Lead mold	0.45	759	mold containing 80% water only, on lead train.
	L	064-3	Water	Lead mold	0.45	759	mold containing 80% water only, on lead train.
	L	064-4	Water	Lead mold	0.45	759	mold containing 80% water only, on lead train.
	L	064-5	Water	Lead mold	0.45	759	mold containing 80% water only, on lead train.
	S	065	BHB	Drum	2.10	14868	seven drums of Bag house bags 80-100% full.
	S	066	Iron	Bag		2000	magnitite; one pallet of 25 unbroken bags.
	S	067	Slag	Drum	0.27	1911	one drum 90%.
X	L	068	Water	Tank	0.17	287	contained material to be determined. Cooling tower sump
	S	069	Slag	Lead mold	0.50	3540	unreacted slag in mold.
	L	070-01	Water	Slag pot	0.80	1348	water in pot.
	L	070-02	Water	Slag pot	0.80	1348	water in pot.
	L	070-02	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-03	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-03	Water	Slag pot	0.80	1348	water in pot.
	L	070-04	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-05	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-06	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-07	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-08	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-09	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-10	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-11	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-12	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-13	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-14	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-15	Water	Slag pot	0.80	1348	50% to 100% full

Table
(continued)
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	L	070-16	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-17	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-18	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-19	Water	slag pot	0.80	1348	50% to 100% full
	L	070-20	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-21	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-22	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-23	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-24	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-25	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-26	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-27	Water	Slag pot	0.80	1348	50% to 100% full
	L	070-28	Water	Slag pot.	0.80	1348	50% to 100% full
	S	071	Slag	Lead mold	0.50	3540	slag in mold 100% full.
	S	072	Lead	Lead mold	0.50	9524	100% full.
	S	073	Dross	Lead mold	0.25	2528	50% full.
	S	074	Slag	Drum	1.68	11894	17 drums 30% full, one lead pot 30% full.
	S	075	Slag	Slag pot	0.50	3540	100% full.
	L	076-01	Petroleum	Drum	0.05		one drum 15% full of a water/gear oil.
	L	076-02	Petroleum	Drum	0.05		one drum 15% full of a water/gear oil.
	L	076-02	Petroleum	Drum	0.30		four drums on edge lube oil.
	L	076-03	Petroleum	Drum	2.70		nine drums, approx. 100% full, lube oil.
X	L	077	Water	Drum	0.27	455	water on top of a soap composition, two drums 100% full.
	S	078	Coke	Drum	0.09	212	30% full.
	S	079	Red Phosphorus	Drum	0.92	2540	four drums 100% full; two drums 30% full.
	S	080	Sodium	Pail	0.18	294	six pails 100% full.
	S	081	Sodium Powder	Drum	0.30	343	one drum 100% full.
	S	082	Lead	Lead mold	7.50	142855	15 molds connected on lead train beneath rotary kiln.
	S	084	Lead Oxide	Tank			Cyclone 1 and Cyclone 2; empty
	L	085	Water	Pail			two buckets of rain water. empty
	S	086-01	Slag	Slag pot	1.00	7080	100% full
	S	086-02	Slag	Slag pot	1.00	7080	100% full
	S	086-03	Slag	Slag pot	1.00	7080	100% full
	S	086-04	Slag	Slag pot	1.00	7080	100% full
	S	086-05	Slag	Slag pot	1.00	7080	100% full
	S	086-06	Slag	Slag pot	1.00	7080	100% full
	S	086-07	Slag	Slag pot	1.00	7080	100% full
	S	086-08	Slag	Slag pot	1.00	7080	100% full
	S	086-09	Slag	Slag pot	1.00	7080	100% full
	S	086-10	Slag	Slag pot	1.00	7080	100% full
	S	086-11	Slag	Slag pot	1.00	7080	100% full
	S	086-12	Slag	Slag pot	1.00	7080	100% full
	S	086-13	Slag	Slag pot	1.00	7080	100% full
	S	086-14	Slag	Slag pot	1.00	7080	100% full
	S	086-15	Slag	Slag pot	1.00	7080	100% full
	S	086-16	Slag	Slag pot	1.00	7080	100% full

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Table
(continued)
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	S	086-17	Slag	Slag pot	1.00	7080	100% full
	S	086-18	Slag	Slag pot	1.00	7080	100% full
	S	086-19	Slag	Slag pot	1.00	7080	100% full
	S	086-20	Slag	Slag pot	1.00	7080	100% full
	S	086-21	Slag	Slag pot	1.00	7080	100% full
	S	086-22	Slag	Slag pot	1.00	7080	100% full
	S	086-23	Slag	Slag pot	1.00	7080	100% full
	S	086-24	Slag	Slag pot	1.00	7080	100% full
	S	086-25	Slag	Slag pot	1.00	7080	100% full
	S	086-26	Slag	Slag pot	1.00	7080	100% full
	S	086-27	Slag	Slag pot	1.00	7080	100% full
	S	086-28	Slag	Slag pot	1.00	7080	100% full
	S	086-29	Slag	Slag pot	1.00	7080	100% full
X	S	087-01	Slag	Bulk	1110.00	7858314	"Slag Bldg. Bins".
	S	087-02	Slag	Bulk	0.18	1274	
X	S	087-03	Slag	Bulk	400.00	2831825	"Bin #1".
	S	087-04	Slag	Bulk	1.00	7080	in crusher bldg. on second floor
X	S	087-05	Slag	Bulk	3600.00	25486423	Coke and dross bins
	S	087-06	Slag	Bulk	1020.00	7221153	Battery bin # 5
	S	088	Slag	Bulk	7.40	52389	pile beneath the Kiln Burner Bldg.
	?	089	Slag	Pail	0.08	566	three 5 gal. pails 70%-100% full slag contaminated gravel
	G	090	Acetylene	Cylinder			approx. 80 CF, ?% full.
	G	091	Oxygen	Cylinder			approx. 80 CF, ?% full.
	G	092	Hydrogen	Cylinder			approx. 80 CF, ?% full.
	L	093	Petroleum	Drum	0.60		two drums of 20 WT. motor oil
	L	094	Petroleum	Drum	0.30		one drum of 30 WT. motor oil 100%.
	L	095	Petroleum	Drum	0.60		two drums of 220 ATF., Mobil
	L	096	Petroleum	Drum	0.30		hydralic oil,
X	L	097-01	Water/Oil	Drum	0.09	152	one drum 30% full.
X	L	097-02	Water/Oil	Drum	1.50	2528	five drums 100% full.
X	L	097-03	Water/Oil	Pail	0.03	51	50% full
	S	098	Lead Bearing	Drum	0.30	2124	a decomposed drum containing floor sweeping material.
X	S	099	Molycorp	Pail	0.03		Note in sm. strg. bldg.: 50% full, Union 76 Molycorp.
	?	100	?	Pail	0.02		Note in sm. strg. bldg.: 50% full. Unable to confirm this location
X	S	101	Lead	Pail	0.09	1714	Note in sm. strg. bldg.: three pails 50%-100% full. Lead skimmings
	S	102	Lead Chloride	Pail	0.01	145	Note in sm. strg. bldg.: 100% full, labled "corrosive".
	S	103	Petroleum Coke	Pail	0.12		Note in sm. strg. bldg.: two pails, one box both 100% full. Pemets
	S	104-1	Coke	Pail	0.01	1415	Note in sm. strg. bldg.: 10% full.
	S	104-2	Coke	Pail	0.03	4244	Note in sm. strg. bldg.: 100% full.
	S	105	Sodium Carbonate	Pail	0.02	11	Note in sm. strg. bldg.: 50% full, white in color.
	S	106	Florspar	Pail	0.09	4	Note in sm. strg. bldg.: three pails 100% full.
	S	107	Sodium Borate	Pail	0.03	78	Note in sm. strg. bldg.: two pails 100% full.
	S	108	Lime	Pail	0.03	71	one pail 100% full.
	S	109	Potassium Carbonate	Pail	0.03	103	Note in sm. strg. bldg.: one pail 100% full.
	S	110	Lead Oxide	Pail	0.03	22	Note in sm. strg. bldg.: one pail 100% full.
	S	111	Lead Oxide	Tank	30.00	148680	tank holding material from the Kiln. (Bag house)

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Table
(continued)
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	S	112	Lead Oxide	Bulk			extending from the sweater furnace, vol. TBD. cyclone. empty
	S	113	Lead Oxide	Bulk	20.00	99120	extending from the sweater furnace, vol. TBD. bag house
	S	114	Soda Ash	Tank	220.00	373801	"Soda Ash Silo", LWC 23.4'.
	S	115	Iron	Bulk	0.50	3054	scrap iron, iron hopper
	S	116	Coke	Tank	203.00	479050	"Coke Silo", LWC 27.3'.
X	S	117	Lead Oxide	Bulk	3.70	18336	lead oxide dust. Fuchs
X	S	118	Lead Oxide	Bulk	80.00	566365	area about feed conveyor way, lead bearing scrap, vol. 80 CY.
	S	119	Lead Oxide	Bulk	0.74	5239	spillage from bag house.
	S	120	BHB	Drum	0.42	2973	two drums 70% full, three boxes 100lbs. 90% full.
	S	121	Lime	Bulk	0.30	708	
X	L	122	Water	Trench	74.20	124210	trench drain parallel to Rotary kiln.
	L	123	Water	Drum	0.03	51	10% full
	S	124	Lead Oxide	Drum	0.60	4248	two drums 100% full, material from Fuchs.
	S	125	Lead Bearing	Drum	1.92	13593	eight drums 70%-100% full.
X	S	126	Lead Bearing	Bulk	74.00	523888	lead feed material.
	S	127	Lead Bearing	Bulk	4.60	32566	lead feed material.
	S	128	Lead Bearing	Bulk	27.80	196812	Lead feed material
X	L	129	Water	Trench	49.50	82863	Thickener tank overflow cleanout ramp.
X	S	129	Lead Oxide	Trench	12.00	59472	Thickner tank over flow clean-out ramp
	S	130	Lead Bearing	Drum	0.30	2124	"Middlings" material, decomposed drum, 100% full.
X	L	131	Water	Tank	0.60	1011	15 CF, liquid layer of CK 131.
	S	131	Lead Oxide	Tank	0.01	50	solid layer of CU 131. decasing
X	S	132	Lead Oxide	Tank	1.40	9911	37 CF, 100% full lead oxide.
X	S	133	Iron Oxide	Tank	1.70	10385	Magnifloat
X	L	134	Water	Tank	1.60	2678	42 CF, adjacent to Kayley flow meter, 1.2 mRems detected.
X	S	135	Lead Oxide	Tank	8.10	57344	2200 CF, 10% full. Filter drum
X	S	136	Lead Oxide	Tank	2.40	16991	330 CF, 20% full. Spiral Classifier
	S	137	Lead Oxide	Bulk	6.00	42477	Spillings from pellitizer
X	S	138	Dross	Drum	3.00	30341	ten drums containing grid metal and drosses 50%-100% full.
	S	139	Dross	Drum	0.20		four decomposed drums, 70% full.
	L	140	Petroleum	Drum	0.30		two drums 100% full, 80W-90 Mobil Lube.
	L	141	Petroleum	Drum	0.15		one drum 50% full, Exxon Chain Lube.
	L	142	Water	Tank			"Thickener Tank" - empty
	S	142	Lead Oxide	Tank	15.00	106193	"Thickener Tank" solid 1 ft. in thickness..
	S	143	Lead Oxide	Tank	11.63	57634	total depth 37.4 ft., depth to lead oxide 33.4 ft.
	S	144	Lead Bearing	Bulk	1.00	7080	lead bearing scrap.
	S	144-1	Lead Bearing	Drum	0.40	2832	lead bearing scrap, two drums 100% full.
	S	144-2	Lead Bearing	Drum	0.90	6372	3 drums 100% full.
	S	144-3	Lead Bearing	Drum	0.06	425	Note; TD right: one drum 20% full.
	S	145	Dross	Bulk	0.18	1820	One drum 60% full
	S	146	Iron	Bulk	1.00	8731	Iron scrap.
	S	147-1	Lead Bearing	Drum	8.40	59468	approx. 28 drums 80%-100% full containing paper materials.
	S	147-2	Lead Bearing	Drum	0.30	2124	paper and tyvek material.
	S	147-3	Lead Bearing	Drum	8.10	57344	27 drums 100% full, paper materials.
	S	147-4	Lead Bearing	Drum	0.30	2124	Note; TD right: one drum 100% full, paper materials.
	S	148	Lead Bearing	Drum		1699	one drum 80% full, material is black in color (magn' ??).

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Table
(continued)
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
	S	149	Iron	Bulk	3.00	26194	coal material.
	S	149	Coke	Bulk	1.00	2360	In the area of "Bin #3", iron dross.
X	L	150	Water	Drum	1.50	2528	Assume 15% of 49 drums in top tier: liquid 70% full.
X	S	151	Lead Bearing	Drum	1.50	10619	Assume 15% of 49 drums in top tier: solid material 7%.
	S	152	Ceramic Glaze	Drum	1.50		Assume 15% of 49 drums in top tier: 100% full, Fired Glaze
	S	153	Paper	Drum	1.00	169	Assume 10% of 49 drums in top tier: paper cups, 70% full.
X	S	154	Lead Bearing	Drum	0.15	1062	7# solid material, 30%-70% full.
	S	155-1	BHB	Drum	2.20	15575	Assume 15% of 49 drums in top tier: 7# drums, BHB 100% full.
	S	155-2	BHB	Drum	0.60	4248	In the area of "Bin #2", two drums 100% full.
	S	156	Air Filters	Drum	1.80		Assume 15% of 49 drums in top tier: 80% full.
	S	157	Furnace Brick	Drum	1.76	7862	Assume 15% of 49 drums in top tier: 7# drums, 80% full.
	S	158	Jar Lids	Drum	0.30		one drum 100% full.
X	S	159	Dross	Drum	0.27	2731	one drum, 80%-100% full.
	S	160	Dross	Drum	0.20	2023	one drum, 70% full.
X	S	161	Dross	Drum	0.20	2023	one drum, 70% full.
	S	162	Cement	Drum	0.30	708	one drum, contained in plastic, 100% full.
X	S	163	Lead Bearing	Drum	2.85	20177	20 drums containing lead hard head material, 30%-50% full.
	S	164	Ash	Drum	0.16		one drum containing an ash-like material, 80% full.
	S	164-1	Lead Bearing	Drum	0.30	2124	one drum containing lead hard head material, 100% full.
	S	164-2	Lead Bearing	Drum	0.21	1487	Note; TD left: one drum containing lead hard head material, 70% full.
	S	164-3	Lead Bearing	Drum	1.89	13380	In the area of "Bin #2", nine drums, lead hard head material, 70% full
	S	165	Sulfur	Drum	0.20	472	two drum 100% full, "Bee-Beed" material
	S	166	Dross	Drum	0.48	4855	two drums 80% full.
	S	167	Dross	Drum	0.24	2427	one drum 100% full.
X	L	168	Water	Tank	0.05	46	(4) Dross Hoppers: 3-empty, 1-10 gals.
	S	169	Lead Bearing	Drum	0.24	1699	Note; TD left: battery plates, one drum 80% full.
	S	170	Lead Bearing	Drum	78.00	552206	Note; TD left: ~= 260 fiber drums w/ lead scrap & lead oxide, 100% ful
	S	170	Lead Bearing	Drum	0.15	1062	In the area of "Bin #2", one drum, white coke material, 50% full.
X	S	170	Lead Bearing	Drum	54.00	382296	Note; TD right: ~= 180 fiber drums w/ lead scrap & lead oxide, 100% fu
X	S	171-1	Lead Bearing	Bulk	8.00	56636	Note; TD rear: lead scrap
	S	171-1	Lead Bearing	Drum	21.00	148671	Note; TD left: ~= 70 steel drums w/ lead hard head, lead scrap, 100% f
	S	171-2	Lead Bearing	Bulk	8.00	56636	Note; TD right: lead scrap
	S	171-3	Lead Bearing	Drum	0.06	425	Note; TD right: one drum 20% full.
	S	171-4	Lead Bearing	Drum	0.21	1487	In the area of "Bin #3", one drum 70% full, hard head.
	L	172	Petroleum	Tank	4.44	7484	Hydr. Fluid Tank, adj. hydr. oil tank.
X	S	173	Lead Bearing	Bulk	40.00	283182	Note; TD left: "Mill Scale Bulk".
	L	174	Petroleum	Pail	0.09		Note; TD right: three capped pails of used oil, 100% full.
	S	175	Lead Oxide	Tank	11.39	56498	containing lead oxide, Acid tanks
	S	176	BHB	Bulk	3.00	21239	In front of "Bin #1".
X	L	177	Water	Tank	1.80	3034	approx. vol. 375 GAL. (50 CF).
X	S	177	Lead Oxide	Pit	18.40	130264	approx. slag vol. 6.0 CF, lead oxide vol. 490 CF. acid tank
	S	178	Slag Stone	Bulk	3.00	21239	In the area of "Bin #2".
X	S	179	Hard Rubber	Bulk	60.00		In the area of "Bin #2".
	S	180	Plast.Batt.Case	Drum	0.30		In the area of "Bin #2", one drum 100% full.
	S	181	Dross (red)	Drum	2.70	27307	In the area of "Bin #3", nine drums 100% full, "Hard Pack".
	S	181	Dross (red)	Drum	0.30	3034	In the area of "Bin #4", #7, 100% full, Hard Pack.

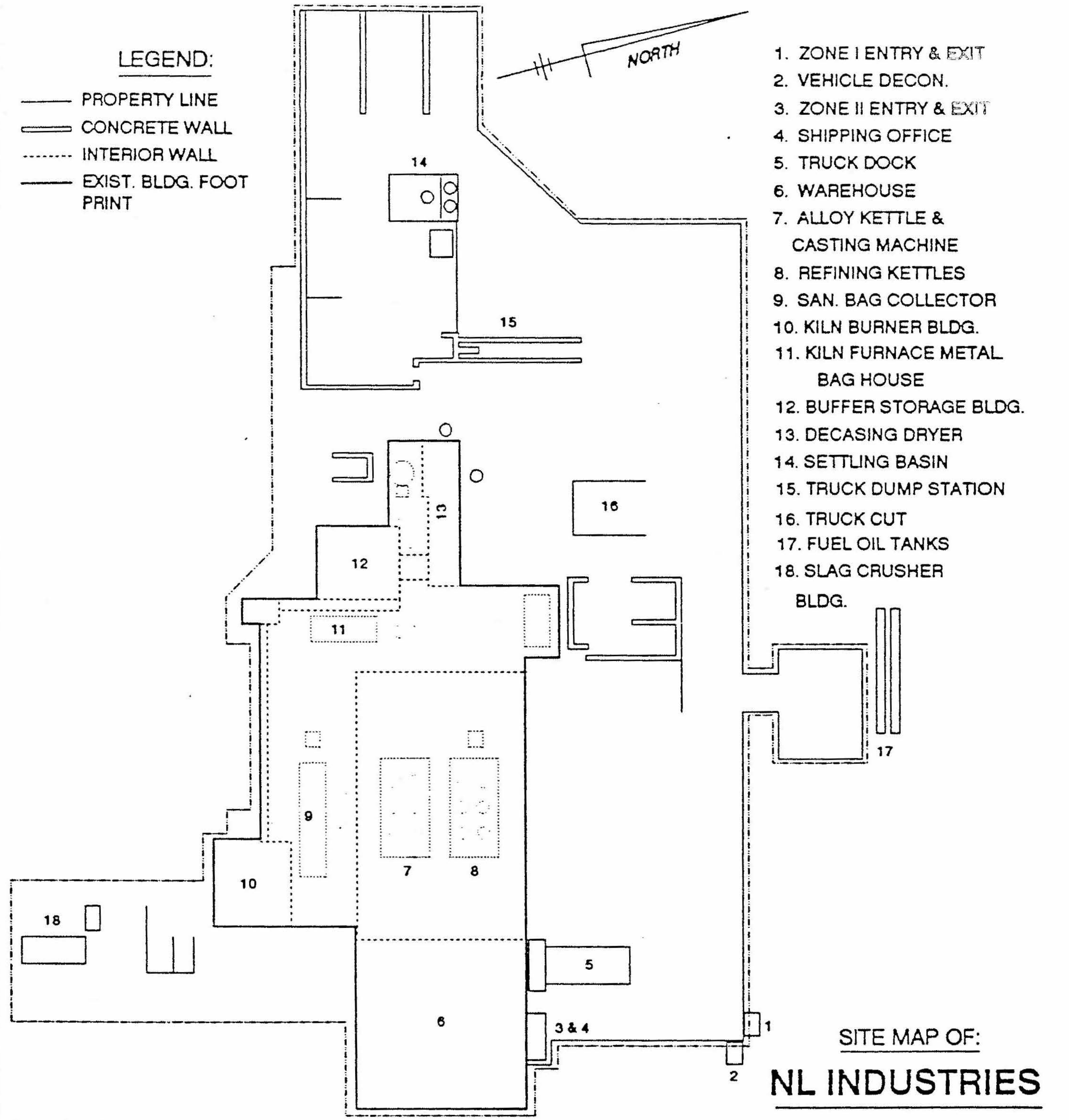
2100084

Table
(continued)
NL Industries
NSNJ Pedricktown Facility
Waste Inventory

SAMPLED	STATE	NUMBER	MATERIAL TYPE	CONTAINER	VOLUME (cu yd)	MASS (lbs.)	DESCRIPTION
X	S	181	Dross (red)	Bulk	3.60	36409	12 drums in the area of "Bin #3", 100% full
X	S	182	?	Drum	3.30	23363	In the area of "Bin #3", 22 drums 50% full.
X	S	183	Dross (black)	Drum	2.70	27307	In the area of "Bin #3", black color, 10 drums 30%-90% full.
X	S	184	?	Drum	0.20		In the area of "Bin #3", liquid top black solid below, odor, 70% full.
X	S	185	Lead Oxide	Bulk	30.00	212387	In the area of "Bin #3".
	S	186	Slag/Lead Scrap	Bulk	78.00	552206	In the area of "Bin #3".
X	S	187	Dross (yellow)	Drum	0.20	2023	In the area of "Bin #3", one drum yellow dross material, 100% full.
X	S	188	Lead Bearing	Bulk/Drum	100.00	707956	In the area of "Bin #3", hard head, slag drums, lead oxide, scrap mat.
X	S	189	Scrap Wood	Bulk	50.00	8500	In the area of "Bin #3", misc. clean up debris.
	S	190	Lead Bearing	Bulk	30.00	b212387	In the area of "Bin #3", piled hard head material.
X	S	191	Lead Bearing	Bulk	200.00	1415912	In the area of "Bin #4", piled hard hard material.
	S	192	Lead Oxide	Tank	2.00	14159	tank, volume 130 gal., only solid present.
	S	193	Lead Bearing	Drum	0.15	743	one drum 50% full.
	S	193	Lead Bearing	Lead mold	0.25	1770	one pot 50% full.
	S	194	Slag	Bulk	5.00	24780	Slag crusher bag house
	L	195	Petroleum	Drum	0.18		three drums 20% full.
X	L	196	Water	Bulk	1336.89	2237953.86	Hoffmans pond. pond of rain water
X	L	197	Water	Tank	3.70	6193.80	Oil water seperator for the fuel station
X	L	198	Water	Tank	8.89	14881.86	Wheel wash station holding tank
X	L	199	Water	Tank	88.89	148801.86	Rain water collected in truck scale
X	L	200	Water	Tank	0.48	803.52	Water in Laboratory Tank
X	L	201	Water	Tank	37.23	62323.02	Shower collection Tank, full
	L	202	Water	Tank	2.90	4854.60	Septic Transfer Tank
X	L	203	Water	Tank	407.40	681987.60	Rain water collected in refining basements
X	L	204	Water	Bulk	185.00	309690.00	Rain collected in truck dock - shipping dock
X	L	205	Water	Bulk	92.75	155263.50	Rain collected in truck cut - recieving dock
X	L	206	Water	Tank	62.96	105395.04	Rain collected in truck dump station - truck lift
X	S	207	Dross(yellow)	Bulk	592.59	4195833.46	Tinny dross in dross bins adjacent to location 87-5
	L	208	Petroleum	Tank	7.92		Two large 25000 gal. white No. 2 fuel tanks lying horizontal
	L	209	Petroleum	Tank			Underground Diesel tank, amount to be determined by S. Holt.
	L	210	Petroleum	Tank			Two adjacent gasoline tanks (1-leaded+1-unleaded) amount to be determined
X	L	211	Petroleum	Tank	1.10		Hydraulic fluid in hydralic drive for shredder
	L	212	Petroleum	Tank	0.18		Hydraulic fluid in portable barrel crusher, next to location #211

Notes:
TBD - To Be Determined.
TD (left or right) ~Truck Dump.
BHB - Bag House Bags.
? - material unknown.

2100085



SITE MAP OF:

NL INDUSTRIES

PEDRICKTOWN, NEW JERSEY

DWN. NOT TO SCALE

DWN. BY: DR.
REVISED: 12-21-90
DWN.#2628P

WESTON MANAGERS DESIGNERS/CONSULTANTS — Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM E. Dominach	SITE MAP
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R E. SARRIERA ASSOCIATES	TAT PM J. Manfreda	Figure B

SUMMARY OF POTENTIAL TOXICOLOGICAL EFFECTS OF
SOME OF THE IDENTIFIED HAZARDOUS CHEMICALS AT:

NL INDUSTRIES

PEDRICKTOWN, NEW JERSEY

	CARCINOGEN	MUTAGEN	TERATOGEN	TOXIC BY INHALATION, INGESTION OR DERMAL CONTACT	CENTRAL NERVOUS SYSTEM DAMAGE	LIVER DAMAGE	CARDIOVASCULAR SYSTEM DAMAGE	LUNG DAMAGE	KIDNEY DAMAGE	LYMPHATIC SYSTEM DAMAGE	EYE, SKIN, RESPIRATORY & MUCOUS MEMBRANE IRRITANT
ANTIMONY				●			●				●
ARSENIC	●			●		●		●	●	●	●
BARIUM				●	●						●
BERYLLIUM	●			●				●			●
CADMIUM	●			●					●		●
CHROMIUM				●							●
COBALT				●							●
COPPER				●							●
CYANIDE				●	●		●	●	●		●
LEAD				●	●						●
MAGNESIUM				●							●
MANGANESE				●	●				●		●
MERCURY				●	●				●		●
NICKEL	●			●				●			●
SELENIUM				●		●			●		●
THALLIUM				●	●	●		●	●		●
VANADIUM				●							●
ZINC				●							●

DWN. BY: DR.
REVISED: 12-21-90
DWN.#26880

MANAGERS DESIGNERS/CONSULTANTS

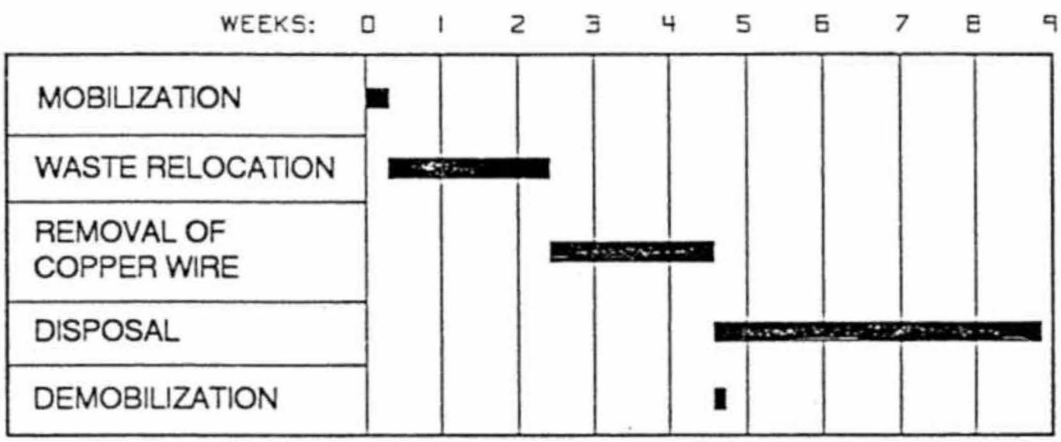
Roy F. Weston, Inc.
MAJOR PROGRAMS DIVISION

IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R E. SARRIERA ASSOCIATES

EPA PM E. Dominach	TOXIC EFFECTS CHART
TAT PM J. Manfreda	Figure C

NL INDUSTRIES

PEDRICKTOWN, NEW JERSEY



NOTE: THERE WIIL BE A PERIOD OF APPROXIMATELY SIX MONTHS DELAY IN WAITING FOR DISPOSAL APPROVALS BETWEEN TREATMENT TECH. AND DISPOSAL.

DWN. BY: DR.
DATE: 12-20-90
DWN.#2628U

WESTON MANAGERS DESIGNERS/CONSULTANTS — Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM E. Dominach	WORK SCHEDULE
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R E. SARRIERA ASSOCIATES	TAT PM J. Manfreda	Figure D

COMMUNITY RELATIONS PLAN
NL INDUSTRIES
PEDRICKTOWN, NEW JERSEY

Prepared for:

Eugene Dominach, OSC
U.S. EPA
Emergency and Remedial Response Division
Removal Action Branch
Edison, New Jersey 08837

Prepared by:

Amy Bergmueller
Weston/MPD
Edison, New Jersey 08837

TABLE OF CONTENTS

Community Relations Plan
NL Industries
Pedricktown, New Jersey

I. INTRODUCTION

A. Site Description

The 46-acre NL site, an abandoned secondary lead smelting facility is located 1.5 miles east of the Delaware River in Pedricktown, Oldmans Township, Salem County, New Jersey. The site overlies the Cape May Aquifer, and Oldmans Creek, a tributary of the Delaware River, is nearby. The area is zoned for industrial development, but includes a small amount of housing and a residential area is located within 1,000 feet of the site. An active Conrail line runs directly through the property, separating the smelting facility to the south and the closed New Jersey Department of Environmental Protection (NJDEP) permitted landfill to the north.

The NL refinery originally consisted of a typical blast furnace, a reverbetary furnace for smelting and kettles for lead refining. However, as a result of repeated air pollution violations, the NJDEP required NL to replace its blast furnace with a rotary kiln to reduce the levels of airborne lead, cadmium, antimony and ferrous sulfate. The kiln was installed in 1978.

NL established a permitted hazardous waste landfill on site to dispose of the process waste streams. One portion of the landfill contains blast furnace and kiln slag waste, while the other portion contains hard rubber case material and lead-contaminated soils excavated from the facility's grounds according to the terms of an October 6, 1982 Administrative Consent Order (ACO) reached between NL and NJDEP.

The site is enclosed by a fence; warning signs are posted.

The features of particular concern include:

* Four slag piles containing 5,000 cubic yards of material;
* Lead oxide in drums, piping, tanks, piles and process equipment;
* Lead oxide dust found on buildings, floors, piping, dust collectors, exhaust systems and debris;
* 1,000,000 gallons of heavy metal-contaminated standing water
* Approximately 4,200 cubic yards of waste material including fiber packs of dust collector bags, kiln slag, and other debris;
* Dross material found in bins, drums and crucibles, and
* Metals located in the basement of the process building and throughout the site.

(See Appendix A, "Site Location Map", "Site Map", and "Site Plan".)

B. Site History

In 1972, NL Industries began recycling lead from spent automotive batteries. The sulfuric acid was drained from the batteries and the casings were crushed and buried with rubber by-products in an on-site landfill. The lead plates were removed and smelted in a blast furnace.

From 1973 through 1980, the New Jersey Department of Environmental Protection (NJDEP) cited the facility with 46 violations of state air and water regulations.

In 1975, the Salem County Department of Health (SCDOH) sampled 15 private drinking water wells in NL's vicinity. One well exhibited a high lead content. Several months later, the residences along Benjamin Green Road were connected to the municipal water line.

In 1976, NJDEP sampled on-site wells and surface water. Test results showed elevated levels of various heavy metals, primarily lead.

In 1977, an air monitoring program was initiated by NJDEP, which found elevated levels of airborne lead, cadmium, antimony and ferrous sulfate. Consequently, in 1978 NJDEP required NL Industries to replace its blast furnace. A rotary kiln was installed in its place, which reduced the number and amount of pollutants entering the air.

SCDOH's 1977 surface and well water sampling confirmed the presence of hazardous substances including lead and cadmium in concentrations detrimental to public health and the environment. In 1977, NL cleaned up the battery storage area and installed a liner to contain acid leakage from the batteries.

In 1980, following a NJDEP order, NL constructed a lined (membrane and asphalt) landfill to replace the original unlined pit.

Smelting operations were discontinued in May 1982. In October 1982, NL Industries and NJDEP entered into an Administrative Consent Order (ACO). The ACO required NL Industries to conduct a remedial program, which included site soil removal and replacement, cleaning of paved plant areas, prevention of surface water run-off, closure and post-closure plans for the landfill, installation of groundwater monitoring wells, and installation of a groundwater abatement system. That same year, the site was added to the National Priorities List (NPL), a roster of hazardous waste sites requiring remedial action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) or "Superfund"; NL ranked 135.

In February 1983, the facility was sold to National Smelting of New Jersey Inc., (NSNJ), and smelting operations resumed. NSNJ, its parent company National Smelting and Refining Co., Inc., NL Industries and NJDEP entered into an Amended Administrative Consent Order on October 1983, which identified NSNJ's and NL's obligations.

NSNJ ceased smelting operations in January 1984, and filed for bankruptcy that March. The bankruptcy was later dismissed.

In accordance with a consent agreement signed in April 1986, NL Industries assumed responsibility for conducting the long-term Remedial Investigation/Feasibility Study (RI/FS). This was approved by the EPA on June 17, 1987.

A public meeting was held in June 1988, at which time EPA outlined the scope of the RI/FS. Residents were concerned about site security, the threat of fire and the contamination of shallow residential potable water wells. In December 1988, the EPA funding was approved and it responded by repairing the fence and installing an additional 900 feet of chain-link fence, and posting warning signs.

Several contaminated areas remained: processing buildings and equipment; slag piles; lead oxide piles; and other waste materials such as deteriorated drums, fiber packs and standing water. In June 1989, the EPA confirmed the presence of highly reactive and hazardous materials in the facility's warehouse. Additional funding was approved in September 1989 for removal and recycling of hazardous materials, warehouse security and encapsulation of four slag piles.

In December 1989, EPA conducted a preliminary site investigation and sampled standing water, process buildings, slag piles, lead oxide piles and other hazardous waste areas. A total of 110 samples were collected.

C. Community Profile

Oldmans Township is located in the northern portion of Salem County. It is bordered on the north and west by the Delaware River, by Oldmans Creek and Gloucester County on the north and east, and Upper Penns Neck Township on the south. The site is located along Penns Grove-Pedricktown Road in Pedricktown.

The site is part of an area zoned for development as an industrial park and includes the following facilities: Airco, B.F. Goodrich, Browning-Ferris Industries and Exxon, Tomah Division. Some of these corporations reportedly have addressed environmental concerns on their properties.

D. History of Community Involvement

According to the director of SCDOH, the county has received complaints about the facility since the beginning of its operation. Air pollution was the community's initial concern. Residents claimed their property was being damaged by the thick red smoke emitted from the plant's stacks. According to several residents, cars and aluminum siding became speckled "overnight" with black spots. In addition, residents stated that the night air was unbreatheable and had a distinctly acidic odor.

During the mid-1970's, in response to residents' complaints, NJDEP began to monitor air emissions from the plant. In 1976, a group of residents on Benjamin Green Road organized a meeting with NL Industries' officials. Initially intended to be a small meeting for residents living adjacent to the site, the meeting drew 150 Pedricktown residents. In response to the numerous complaints expressed at the meeting, NL Industries cleaned and re-sided a number of houses and painted the cars of some residents.

In 1976, residents also expressed concern about drinking water quality. At that time, Benjamin Green Road residents relied on private wells for their drinking water. SCDOH responded by testing residential well water. After heavy metal contamination was found, NL Industries voluntarily paid for the installation of a municipal water line to the homes. In addition, residents expressed serious concerns about possible health effects of lead. In response, SCDOH obtained blood samples from more than 100 people on two occasions. One person was found to have elevated blood lead.

Many residents strongly objected to the 1982 sale of the facility to National Smelting. During hearings conducted by the state, residents living near the plant expressed concern about air and water quality problems, which they believed were caused by the lead-smelting facility. During testimony, the chairman of the Pedricktown Planning Board said that the soil was already so heavily contaminated with lead, that reopening the plant could have catastrophic effects on the region's groundwater.

E. Key Issues of Community Concern

Several concerns have been expressed by county and local officials and residents. These concerns pertained to perceived health threats from the site, increased taxes resulting from National Smelting's tax delinquency, and the site's accessibility to vandals and children. In addition, local officials and citizens expressed a desire for improved information coordination and dissemination between agencies involved with the cleanup of the site and increased public participation in the decision-making process.

These concerns are elaborated below.

1. Public Health Concern. Residents and officials are concerned that lead contamination from the site is continuing to spread, posing a danger. They believe Oldmans Creek is threatened with lead contamination. One resident who lives along Route 130, on the recommendation of SCDOH, began purchasing bottled water in 1986. She has written SCDOH and her Congressman concerning the problem. She and other nearby residents do not have the option of using municipal water because Route 130 does not have access to the line. Local officials have said that residents along this road may still be using water from their shallow wells.

   The Pedricktown Planning Board held that Oldmans Creek, a tributary of the Delaware River, is in significant danger of lead contamination. It said that the contamination needs immediate attention to prevent further migration.

2. Tax Increase. National Smelting owed Pedricktown more than $150,000 in back taxes; in 1986, the property was removed from the Pedricktown tax rolls. In order to make up for the lost revenue, Pedricktown was forced to impose a local utility tax on residents. Citizens are upset that they have to pay for National Smelting's tax delinquency, especially when they were originally opposed to National Smelting's 1982 purchase of the property.

3. Site Accessibility. Residents feared that children's curiosity about the site may have resulted in their exposure to dangerous levels of lead and other contaminants. The site was partially secured by a high fence, but the gates were loosely chained, leaving wide gaps that allowed access.

   Also, access could be gained by walking along the railroad tracks that cross the property. When National Smelting closed, the facility was left fully equipped, i.e.; laboratory chemicals and office equipment were left, as if still used on a daily basis. This equipment was attractive and tempted children and adults to explore the abandoned buildings. After several break-ins occurred, the company moved some of its equipment to safer locations. Fencing and 24-hour site security have helped to alleviate this concern.

4. Inadequate Flow of Information. Local officials and citizens have been frustrated and confused by the delays in receiving information about the site. The mayor of Pedricktown discovered that the site was placed on the NPL list by reading a story in the local newspaper. He and other officials wanted access to NJDEP sampling results, even though NJDEP stated that the results were probably invalid because of potential laboratory contamination.

   Additionally, town officials would like to be assured that the site will be remediated in a timely manner.

F. Materials On Site

Within the site there are small, structurally sound buildings that appear well secured. Air/water reactive chemicals, caustic substances and heavy metals are stored inside these buildings.

In an outside area, there are open drums and deteriorating fiber packs of lead bearing raw materials. Four large piles of slag consisting of iron oxide and other heavy metals are also on site.

Rainwater collects in a very large puddle that potentially contains heavy metals and lead leachate. Two silo-like structures, one containing soda ash and the other petroleum coke, are also on site.

The rotary kilns and baghouses are contaminated with toxic lead oxide dust. Lead contamination of the soil in and adjacent to the site is documented.

II. THREAT

A. Public Exposure

Analytical data indicate the presence of high concentrations of lead, arsenic, cadmium, barium and beryllium. These chemicals suggest a health and environmental risk based on toxicity. The threat of direct exposure would be especially high for trespassers.

Presence of hazardous waste material in bulk storage containers, slag and lead piles or other wastes that may pose a threat of release. Most of the hazardous wastes stored or disposed of on-site are relatively stable. However, the chemical constituents in the slag piles even after encapsulation are known to be discharging into the environment. The airborne and stormwater run-off exposure pathways are considered to be a threat to human health.

Releases of contaminants to air may occur from wind erosion of slag piles and other hazardous waste materials at the site. The concentrations of lead, iron and other HSL inorganics detected in the residential and site vicinity are significant due to the airborne dust concentrations at potential downwind receptors.

Prior to the encapsulation of slag piles, ferrous sulphate and lead oxide were detected on the aluminum siding of homes, on automobiles and on concrete. High concentrations of lead, iron, cadmium and antimony were detected in the airborne dust samples collected by NJDEP in 1980.

Samples of standing water collected in 1989 were found to have high concentrations of lead, iron and other HSL inorganics. The standing water was probably contaminated by the slag piles and other debris on site.

The most immediate danger posed to the public is direct contact with materials still on site. The potential infiltration of contaminants into the soil and water table may lead to exposure by inhalation or ingestion. Hydrogeologic studies have demonstrated the existence of three water bearing units beneath the site. The three units consist of the water table aquifer, first confined aquifer and second confined aquifer.

During heavy rains, water soaks into the lead bearing material and leaches the lead compounds. The contaminated rainwater overflows the paved area and spills into the surrounding soil. (See Appendix B, "Risk Assessment of Some of the Hazardous Substances Found at the Site.")

B. <u>Evidence of Release</u>

The sampling of soils, surface water and groundwater, and nearby wells has conclusively proven the presence of hazardous substances in concentrations that are detrimental to the public health and the environment.

C. <u>Previous Actions to Abate Threat</u>

An ACO was issued calling for NL Industries to conduct a remedial program, including soil removal and replacement, cleaning of paved plant areas, prevention of surface water run-off, closure and post closure plans for the landfill, installation of groundwater monitoring wells, and installation of a groundwater abatement system.

The long-term cleanup began with a Remedial Investigation/ Feasibility Study. The study consisted of two phases. Phase I provided initial characterization of the nature and extent of on-site and off-site contamination, which included sampling of on-site and off-site wells, and sampling of surface water, soil sediment, slag and waste materials. It also included the installation of additional on-site monitoring wells. The second phase consisted of groundwater and surface water sampling to further characterize the site.

In 1988 EPA secured the site by erecting a six-foot chain-link fence addition to the existing fence around the former operations facility. Openings in the fence and gate were be mended so that small children could not slip through. A new gate was added which permitted NL personnel to gain access to the maintenance shop from the landfill roadway. Once the fence was erected, warning signs reading, "**WARNING - HAZARDOUS WASTE AREA - UNAUTHORIZED PERSONNEL KEEP OUT**" were posted. In addition, 24-hour site security was initiated.

Where necessary, doors and windows were secured. A dust stabilization material (water glass) was sprayed on the slag piles to reduce air emissions and particulate run-off.

III. Enforcement

A. Summary of Enforcement Strategy

In the past, NL Industries, the EPA and NJDEP have reached agreements, in accordance with the ACO on site cleanup. NL has given $600,000 to NJDEP for an ACO and a consent agreement with the EPA for further remediation. Additionally, NL agreed to perform an RI/FS on the property. Future plans are to continue to try to reach agreements with NL to provide funds for the remediation of the site.

B. Summary of Enforcement Actions

The NJDEP cited NL Industries with 46 violations of state air and water regulations. In 1977, under a NJDEP order, NL cleaned up the battery storage area and installed a liner to contain acid leakage from the batteries.

In 1978, the NJDEP required NL to replace its blast furnace with a rotary kiln in order to reduce airborne emissions. In 1980, NL constructed a lined landfill to replace the original unlined landfill used for disposal of waste materials under a NJDEP order.

On October 6, 1982, NL and the NJDEP entered into an ACO requiring NL to conduct a remedial program of the landfill, surface water, and groundwater.

On February 10, 1983, NL, NJSJ, National Smelting and Refining Co., Inc., and the NJDEP entered into an amended ACO to delineate and distribute the environmental obligations.

In 1986, NL signed a consent order with EPA, whereby NL assumed responsibility for conducting a long-term investigation at the site.

The Site Compliance Branch is overseeing the Remedial Investigation and Feasibility Study (RI/FS) work now in progress.

IV. **Proposed Project**

A. Removal Action

The removal action includes the removal and relocation of all lead contaminated waste scattered throughout the site and stored in deteriorated drums.

The waste will be separated and stored according to waste stream.

Storage areas which will be used include bins #2 and #3 of the Slag Pile "B," which is enclosed by concrete walls and a roof; the outside building area of the refining building, which is protected by a roof; and open inside areas of the decasing building.

Berms will be constructed around the entrance of the stored waste to prevent any runoff.

B. Project Schedule

The proposed project is expected to begin within three weeks of the approval of the Action Memorandum. The project is expected to require more than 12 months to complete.

V. **COMMUNITY RELATIONS PLAN**

A. Objectives

1. Make available accurate and concise information to interested residents, elected officials, and the media.

2. Integrate local government, state and federal responses.

3. Enlist the assistance of local officials as needed.

The plan is meant to inform residents; citizen groups; school groups; local businesses; elected officials; and local, state and federal agencies working in association with Region II EPA. Additional information will be supplied by EPA's Office of External Programs (OEP) under the direction of the Office of the Regional Administrator.

B. Activities

Date(s)	Activities	Objective	Staff
As needed	Meetings with state, county, and local officials	To develop local contingency plans	OSC OEP Rep.
As needed	Press releases	To brief the community and press on site status	OSC OEP Rep.
As needed	Fact sheets	To provide removal activity information to the public	OSC OEP Rep.
As needed	Briefings	To inform state and local officials about on-going developments at the site	OSC OEP Rep.
As needed	Public meetings	To discuss the need for response, review key decision points, explain clean-up methods and respond to the public's concerns	OSC OEP Rep.

This site has been the focus of much attention. In addition to the public meeting held in June 1988, the media has been vigilant and has reported frequently. For example, in January of this year, the site was the subject of a Today's Sunbeam six-part series. (See Appendix C, "Newspaper Articles.")

VI. LIST OF KEY OFFICIALS AND CONTACTS

Federal Agencies	Phone
EPA Region II Response and Prevention Branch	
- Eugene Dominach	(201) 321-6666
EPA Office of External Programs	
- Margaret Randol	(212) 264-2515
- Richard Cahill	(212) 264-8504
- Herman Phillips	(212) 264-1044
- Lillian Johnson	(212) 264-4534
Federal Officials	
- Senator Bill Bradley	(609) 983-4143
- Senator Frank Lautenberg	(201) 645-3030
- Congressman Chris Smith	(609) 386-5534
New Jersey State Agencies	
NJ Department of Environmental Protection	
- Grace Singer (Community Relations)	(609) 984-3141
- Frank Richardson (Project Manger)	(609) 249-4070
New Jersey State Officials	
- Assemblyman Jack Collins	(609) 769-3633
- Assemblyman Gary Stuhltrager	(609) 853-7868
_ Senator Raymond J. Zane	(609) 935-1312

Pedricktown Officials (continued)

- William Jenkins Health Reporting Officer RD Box 236 Straughens Mill Road Pedricktown, NJ 08067	(609) 299-4346
- Samuel Picken, Emergency Managment Coordinator	(609) 299-6307

Planning Board

June Embury, Clerk	(609) 299-2861
Ed Rosinski, Chairman RD Box A Pedricktown, NJ 08067	(609) 299-4953
- Robert Chevreuil	(609) 299-1248
- Sherman McMonigal	(609) 299-6486
- William Ferrell	(609) 299-4958
- Tom Kurtz	(609) 299-3797
- John Todd	
- Iantha Gilliam	(609) 299-5474
- J. Perry	
- Harding Jones	
- Earl Lindle	(609) 299-2980

Philadelphia Inquirer 400 North Broad Street Philadelphia, PA 19130	(215) 854-2000
Today's Sunbeam 93 5th Street Salem, NJ 08079 Contact: Bryon Kurzenabe	(609) 935-1500

Media (Continued)

Penns Grove Record
93 5th Street
Salem, NJ 08079

Fax (302) 324-5511

Salem County Sampler
304 Harding Highway, Rt. 48
Salem, NJ 08069

(609) 935-6300

Radio Stations

WJIC-AM-1510
Box 132
Salem, NJ 08079

(609) 935-1510

WNNN-FM-101.7
2727 Shipley Road
Wilmington, DE 14803

(609) 935-1510

Local Residents

Bud and Linda Alloway
140 Helen Avenue
Pedricktown, NJ 08067

Newton and Mildred Baittinger
RDI Box 5
Pedricktown, NJ 08067

Mr. and Mrs. Boone
RD Box 148
Benjamin Green Road
Pedricktown, NJ 08067

J.L. Carpenter
Benjamin Green Road
Pedricktown, NJ 08067

Anthony DeFeo
Penns Grove-Pedricktown Road
Pedricktown, NJ 08067

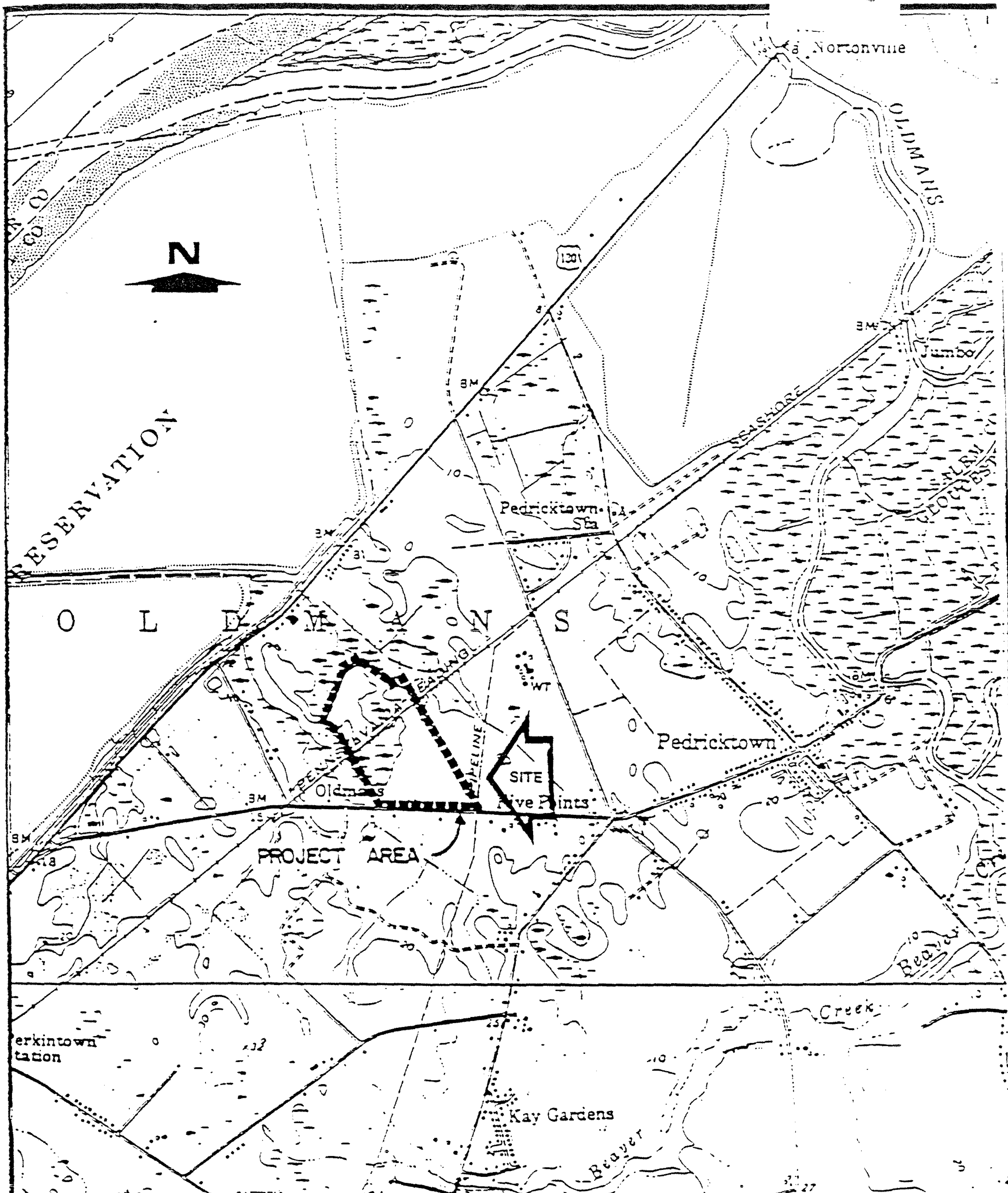
Cookie Drabold
25 Cherry Street
Pedricktown, NJ 08067

Deberry Griffin
Penns Grove-Pedricktown Road
Pedricktown, NJ 08067

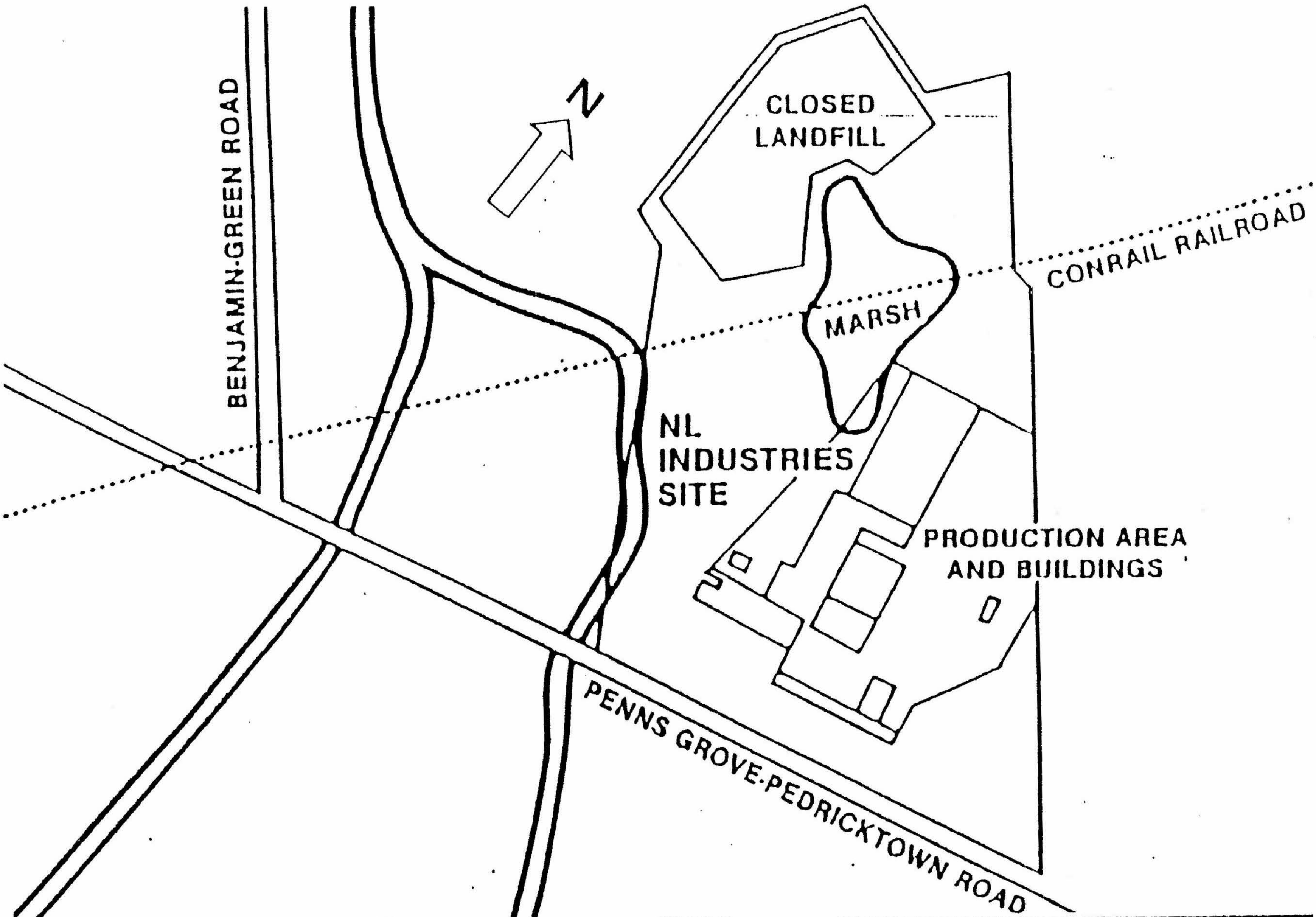
APPENDIX A

FIGURES

300017



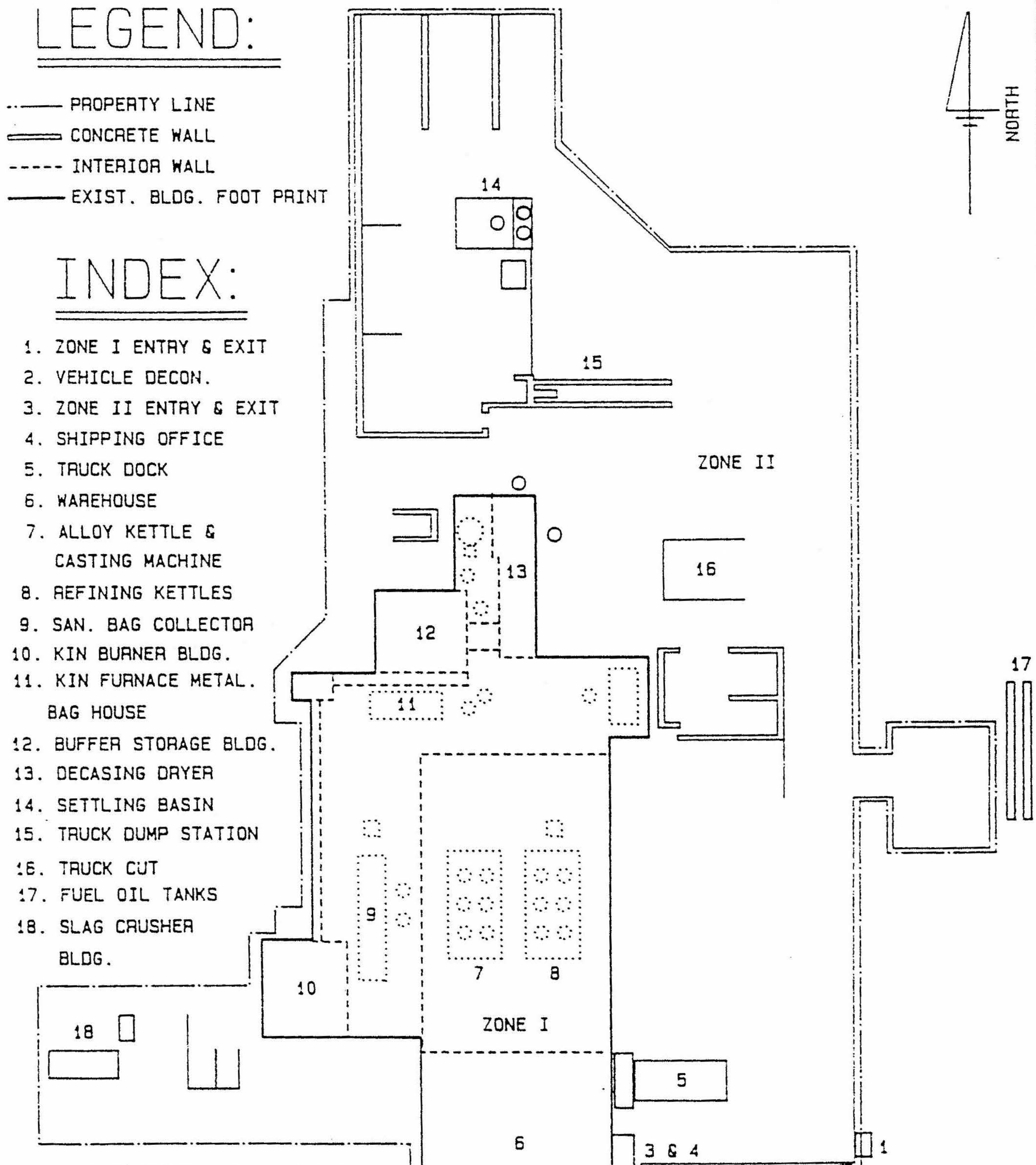
	SITE LOCALTION MAP
	FIGURE 1



300018

SITE MAP

FIGURE 2



SITE PLAN

DATE: 05-31-90

DWN. BY: DR. DWN. #26288

DWN. NOT TO SCALE

WESTON — SPILL PREVENTION & EMERGENCY RESPONSE	EPA PM E. Dominach	N.L. Industries Pedricktown, N.J.
In Association with ICF Technology Inc., C.C. Johnson & Malhotra, P.C., Resource Applications, Inc. and R.E. Sarriera Associates	TAT PM V. Reddy/J. Manfreda	Site Plan

APPENDIX B

RISK ASSESSMENT OF SOME OF THE HAZARDOUS SUBSTANCES FOUND AT THE SITE

RISK ASSESSMENT OF SOME OF THE HAZARDOUS SUBSTANCES FOUND AT THE SITE

	RESPIRATORY TRACT IRRITANT	DERMALLY TOXIC	CARCINOGEN	LIVER DAMAGE	KIDNEY DAMAGE	LUNG DAMAGE	CNS DAMAGE	CARDIO VAS. DAMAGE
ANTIMONY	X	X	X			X		X
ARSENIC	X	X	X					
BERYLLIUM	X	X		X		X		X
BARIUM	X						X	
CADMIUM	X		X					
CHROMIUM	X	X	X	X	X	X		
COPPER	X	X		X	X	X		
LEAD		X		X	X			
MERCURY	X			X	X	X	X	
NICKEL		X				X		
SELENIUM	X			X	X	X		
ZINC		X				X		

DWN. BY: CR.
DATE: 06-29-90
DWN. #2908A

WESTON	SPILL PREVENTION & EMERGENCY RESPONSE	EPA PM E. Dominach	NL Industries Pedricktown, N.J.
In Association with ICF Technology Inc., C.C. Johnson & Malhotra, P.C., Resource Applications, Inc. and R.E. Sarriera Associates		TAT PM V. Reddy/J. Manfreda	

1A1-02-F-04851

300022

COMMUNITY RELATIONS PLAN
NL INDUSTRIES
PEDRICKTOWN, NEW JERSEY

Prepared by:

Dave Triggs
Weston/SPER Division
Edison, New Jersey 08837

Prepared for:

Eugene Dominach, OSC
Emergency and Remedial Response Division
Response and Prevention Branch, US EPA
Edison, New Jersey 08837

Community Relations Plan
NL Industries Site
Pedricktown, New Jersey

TABLE OF CONTENTS

Community Relations Plan
NL Industries
Pedricktown, New Jersey

I. INTRODUCTION

A. Site Setting/Description

The NL site is an abandoned secondary lead smelting facility. The site is situated on 46 acres of land, 1.5 miles from the Delaware River in Pedricktown, Salem County, New Jersey. It is part of an area zoned for development as an industrial park, but includes a small amount of residential housing. Railroad tracks, owned by Conrail, run directly through the property, separating a permitted landfill to the north and a smelting facility to the south. The Pedricktown refinery was built in 1972, utilizing a typical blast furnace and a reverbetary furnace for smelting, and kettles for refining the lead. Due to repeated air pollution violations, the NJDEP required that NL replace the blast furnace with a rotary kiln to reduce the levels of airborne lead, cadmium, antimony and ferrous sulfate. The installation of the kiln took place in 1978. A permitted hazardous waste landfill was established on-site by NL Industries, Inc., to dispose of the process waste streams. A portion of the landfill (Phase A) contains blast furnace and kiln slag waste, while the (Phase B) portion contains hard rubber case material and lead contaminated soils that were excavated from the facilities grounds.

The topography of the region that includes the site is flat to gently rolling land which slopes to the north. (Refer to figures 1, 2, and 3 for site location and site map.)

B. History

Operations began at the site in 1972, when NL Industries opened a plant to recycle lead from spent automotive batteries. The batteries were crushed, with the sulfuric acid drained and removed for treatment. The lead plates were removed and smelted in a blast furnace. The rubber by-products were buried in an on-site landfill.

In 1975, the Salem County Department of Health (SCDOH) sampled 15 private drinking water wells in the vicinity of the facility. One well was found to have a high level of lead. Several months later, the private homes along Benjamin Green Road were connected to the municipal water line.

In 1976, the New Jersey Department of Environmental Protection (NJDEP) sampled on-site wells and surface water. Test results showed elevated levels of various heavy metals, primarily lead.

In 1977, an air monitoring program was initiated by NJDEP, which found elevated levels of airborne lead, cadmium, antimony and ferrous sulfate. Consequently, in 1978 NJDEP required NL Industries to replace its blast furnace. A rotary kiln was installed in its place, which reduced the number and amount of pollutants entering the air.

NL Industries ceased smelting operations in May 1982. In October 1982, NL Industries and NJDEP entered into an Administrative Consent Order. The Administrative Consent Order called for NL Industries to conduct a remedial program, which included site soil removal and replacement, cleaning of paved plant areas, prevention of surface water run-off, closure and post-closure plans for the landfill, the installation of groundwater monitoring wells, and the installation of a ground-water abatement system.

In February 1983, the plant was sold to National Smelting of New Jersey Inc., (NSNJ), and smelting operations were recommenced. NSNJ, its parent company National Smelting and Refining Co., Inc., NL Industries and NJDEP entered into an Amended Administrative Consent Order of October 1982, identifying which environmental obligations were the responsibility of NSNJ and which were the responsibility of NL Industries.

NSNJ ceased smelting operations in January 1984, and filed for bankruptcy in March 1984. The bankruptcy has subsequently been dismissed.

In December 1982, the site was placed on the National Priorities List (NPL), a list of the nation's toxic waste sites requiring remedial action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) or "Superfund". Under a consent agreement signed by NL Industries with EPA in April 1986, NL Industries assumed responsibility for conducting the long-term investigation at the site.

C. Community Profile

Oldmans Township is located in the northern portion of Salem County. It is bounded on the north and west by the Delaware River, by Oldmans Creek and Glouster County on the north and east, and Upper Penns Neck Township on the south. The site is located along Penns Grove-Pedricktown Road in Pedricktown.

The site is part of an area zoned for development as an industrial park and includes operations of the following major corporate entities: Airco, B.F. Goodrich, Browning-Ferris Industries and Exxon, Tomah Division. It has been reported that some of the industries may have addressed environmental concerns on their property.

D. History of Community Involvement

According to the director of SCDOH, the county health department has received complaints about the facility since the beginning of its operation. Most complaints concerned air pollution from the site. Residents living near the site believed their property was being damaged by the thick red smoke that came from the plant's smoke-stacks. According to several residents, cars and aluminum siding would beceme speckled "overnight" with black spots. In addition residents stated that at night the air in their neighborhood was unbreathable and had a distinctly acidic odor. Throughout the plant's operation, air pollution was the community's primary concern.

In the mid-1970's, in response to resident complaints, NJDEP began to monitor air emissions from the plant. In 1976, a group of residents on Benjamin Green Road organized a meeting with NL Industries officials. Initially intended to be a small meeting for residents living adjacent to the site, the meeting drew a crowd of 150 Pedricktown residents. In response to the numerous complaints that were expressed at this meeting, NL Industries cleaned and re-sided a number of houses and painted the cars of some residents.

In 1976, residents also expressed concern over the quality of their drinking water. At that time all of the residences on Benjamin Green Road relied on private wells for their drinking water. SCDOH responded to these concerns by testing their residential well water. After heavy metal contamination was found, NL Industries voluntarily paid for the installation of a municipal water line to these homes. In addition, residents expressed serious concerns over possible health effects from lead. In response, SCDOH obtained blood samples from more than 100 people on two occasions. One person was found to have elevated blood lead.

In 1982, many community residents raised strong objections to the sale of the facility to National Smelting. During hearings conducted by the state on whether or not to approve the sale, residents living in close proximity to the plant cited their concern about both air and water quality problems, which they believed to be caused by the lead-smelting facility, as justification for keeping the plant closed. Also, the chairman of the Pedricktown Planning Board testified that the soil was already so heavily contaminated with lead, that reopening the plant could have catastrophic effects on the region's ground water.

E. Key Issues of Community Concern

Several concerns were expressed during interviews with county and town officials and community residents. These concerns pertained to a perceived health threat from the site, increased taxes as a result of National Smelting's tax delinquency, and the easy accessibility of the site to vandals and local children. In addition, local officials and citizens expressed a desire for improved coordination and information dissemination between agencies involved with the cleanup of the site and an increased public participation in the decision making process for the site.

> <u>Site Accessibility</u>. Local residents fear that children's curiosity about the site may result in their exposure to dangerous levels of lead and other contaminants. The site is partially secured by a high fence, but the gates are loosely chained, leaving wide gaps that allow easy access.
>
> Also, it is possible to gain access to the site by walking along the railroad tracks that cross the National Smelting property. According to local officials, when National Smelting closed, the facility was left fully equipped, i.e.; laboratory chemicals and office equipment were left out, as if still used on a daily basis. This equipment when viewed by local residents was attractive, and tempting to the area's children to enter and explore the abandoned buildings. After several break-ins had occurred, the company moved some of their equipment to safer locations. Residents believe that the danger to those entering the site is the possibility of exposure to contaminated soil and surface waters.

F. <u>Materials On-Site</u>

Within the site there are a number of small, structurally sound buildings that appear well secured. Inside these buildings are stored air/water reactive chemicals, caustic substances and heavy metals.

In an outside area, there are opened drums and deteriorating fiber packs of lead bearing raw materials. There are also large piles of slag, a byproduct of the smelting process that consists mainly of iron oxide; however, it also contains other heavy metals. Rainwater collects in a very large puddle and it is believed to potentially contain heavy metals and lead leached from the lead bearing materials. There are two silo-like structures; one containing soda ash and the other petroleum coke.

There is significant contamination of the rotary kilns and baghouses with lead oxide dust, which is toxic. There is documented evidence of lead contamination of the soil in and adjacent to the site.

II. THREAT

A. Public Exposure

Detailed information pertaining to potential environmental and human health hazards associated with the site are pending the completion of a feasibility study.

The most immediate danger posed to the public at the present time is with human contact with materials still on-site. Access onto the site can be gained through areas of the property not yet fenced off. The potential infiltration of contaminants into the soil and water table aquifers may lead to indirect human contact with contaminants. Hydrogeologic studies have demonstrated the existence of three water bearing units beneath the site. The three units consist of the water table aquifer, first confined aquifer and second confined aquifer. The NJDEP and USEPA has stated that the facility poses no threat to atmospheric lead contamination based on modeling and field investigation.

During heavy rains, rainwater soaks into the lead bearing material and leaches the lead compounds. The contaminated rainwater overflows the paved area into the surrounding soil. However, there is no evidence of migration off-site.

B. Evidence of Release

The sampling of soils, surface and groundwater, and nearby wells have conclusively proven the presence of hazardous substances in concentrations that are detrimental to the public health and the environment.

C. Previous/Current Action to Abate Threat

NL Industries ceased smelting operations in May 1982. An Administrative Consent Order was issued calling for NL Industries to conduct a remedial program, which includes site soil removal and replacement, cleaning of paved plant areas, prevention of surface water run-off, closure and post closure plans for the landfill, the installation of groundwater monitoring wells, and the installation of a groundwater abatement system.

The long-term cleanup will begin with a Remedial Investigation/ Feasibility Study. The study will consist of a two phase approach. Phase I will provide initial characterization of the nature and extent of on-site and off-site contamination, which will include sampling of on-site and off-site wells, and sampling of surface water, soil sediment, slag and waste materials. It will also include the installation of additional on-site monitoring wells. The second phase will consist of groundwater and surface water sampling to further characterize the site.

III. Enforcement

The Site Compliance Branch is overseeing the Remedial Investigation and Feasibility Study work now in progress.

IV. Proposed Project

A. Site Security

The objective of this project is to secure the site by constructing a 6 foot chain link fence addition to the existing fence around the former operations area of the facility. Any openings in the fence and gate will be mended so that small children cannot slip through. A new gate will be added, which is necessary and will permit NL personnel to gain access to the maintenance shop from the landfill roadway. Once the fence is erected, warning signs will be installed which will read: **"WARNING - HAZARDOUS WASTE AREA - UNAUTHORIZED PERSONNEL KEEP OUT"**.
Also, where necessary, doors and windows will be made more secure. A dust stabilization material (water glass) will be sprayed on the slag piles to reduce air emissions and particulate run-off.

B. Project Schedule

Weather permitting, installation of the fence, posting of signs, application of dust stabilization material is expected to commence as soon as possible after the Action Memo is signed. It is anticipated that the project will require 15 working days to complete, weather and the availability of fencing contractors permitting.

V. COMMUNITY RELATIONS PLAN

A. Objective

1. Make available accurate, understandable information to interested local citizens, elected officials, and the media.

2. Integrate the local government, state and federal responses.

3. Assist public acceptance of the chosen response action.

4. Enlist the assistance of local officials as needed.

The information and groups for whom the plan is aimed are: local citizens, citizen groups, school participants, local businesses, elected officials, local, state, and federal agencies working in association with Region II EPA.

The information will be supplied by EPA's Office of External Programs with the cognizance of the Office of the Regional Administrator.

VI LIST OF KEY OFFICIALS AND CONTACTS

Federal Agencies	Phone
EPA Region II Response and Prevention Branch	
- Gene Dominach	(201) 906-6666
EPA Office of External Programs	
- Jim Marshall	(212) 264-4913
- Rich Cahill	(212) 264-8504
- Herman Phillips	(212) 264-1044
- Lillian Johnson	(212) 264-2515
Federal Officials	
- Senator Bill Bradley	(609) 228-2815
- Senator Frank Lautenberg	(201) 645-3030
- Congressman Chris Smith	(609) 386-5534
New Jersey State Agencies	
NJ Department of Environmental Protection	
- Grace Singer (Community Relations)	(609) 984-3141
- Frank Richardson (Project Manger)	(609) 984-2990
New Jersey State Officials	
- Senator C. William Haines	(609) 267-1320
- Assemblyman Harold Colburn	(609) 267-1320
- Assemblyman Robert Shinn	(609) 267-3612

Salem County Officials

Salem County Board of Chosen Freeholders (609) 935-7510
94 Market Street
Salem, NJ 08079

- Joseph Dyer, Director
- Charles Finlaw, Deputy Director
- Charles Ahl
- Albert Graham, Jr.
- John Lake, Jr.
- Benjamin Timberman
- Gliton Ware

Salem County Department of Health (609) 769-2126
346 Salem-Woodstown Road
Woodstown, NJ 08098

- Lawrence Devlin, Jr.
  Public Health Officer
- William J. Hirshillwood
  Assistant Public Health Coordinator

Pedricktown Officials

Oldmans Township Municipal Building (609) 299-0780
West Mill Road
Pedricktown, NJ 08067
Township Committee

- Kenneth Porch, Mayor (609) 299-0568
  Pennsville-Pedricktown Road
  Pedricktown, NJ 08067
- Earl Graham, Deputy Mayor (609) 299-9086
  RD Box 67
  Pedricktown, NJ 08067
- Sam Lodge (609) 299-0090
  Pedricktown-Auburn Road
  Pedricktown, NJ 08067

Pedricktown Officials (continued)

- John Jordan, Township Solicitor (609) 678-3370
  111-113 North Broadway
  Pennsville, NJ 08070

- William Jenkins (609) 299-4346
  Health Reporting Officer
  RD Box 236
  Straughens Mill Road
  Pedricktown, NJ 08067

Environmental Subcommittee of the Planning Board

- Ed Rosinski, Chairman (609) 299-4953
  RD Box A
  Pedricktown, NJ 08067

- Hamilton Pedrick, Jr. (609) 299 2451
  RD Box 187
  36 South Railroad Avenue
  Pedricktown, NJ 08067

- Robert Chevrevil (609) 299-1248
  RD Box 839
  Pennsville-Pedricktown Road
  Pedricktown, NJ 08067

- Sherman McMonigal (609) 299-6486
  North Railroad Avenue
  Pedricktown, NJ 08067

- William Ferrell (609) 299-4958
  40 Mill Street
  Pedricktown, NJ 08067

- Tom Kurtz (609) 299-3797
  Straughens Mill Road
  Pedricktown, NJ 08067

Media

Philadelphia Inquirer (215) 854-2000
400 North Broad Street
Philadelphia, PA

Today's Sunbeam (609) 935-1500
93 5th Street
Salem, NJ 08079

Media (continued)

Penns Grove Record (609) 935-1500
93 5th Street
Salem, NJ 08079

Salem County Sampler (609) 935-6300
40 Market Street
Salem, NJ 08079

Radio Stations

WHIC (609) 935-1510
Woodstown Road
Salem, Nj 08079

WDEL (302) 478-2700
2727 Shipley Road
Wilmington, DE 14803

Local Residents

Bud and Linda Alloway
140 Helen Avenue
Pedricktown, NJ 08067

Newton and Mildred Baittinger
RDI Box 5
Pedricktown, NJ 08067

Mr. and Mrs. Boone
RD Box 148
Benjamin Green Road
Pedricktown, NJ 08067

J.L. Carpenter
Benjamin Green Road
Pedricktown, NJ 08067

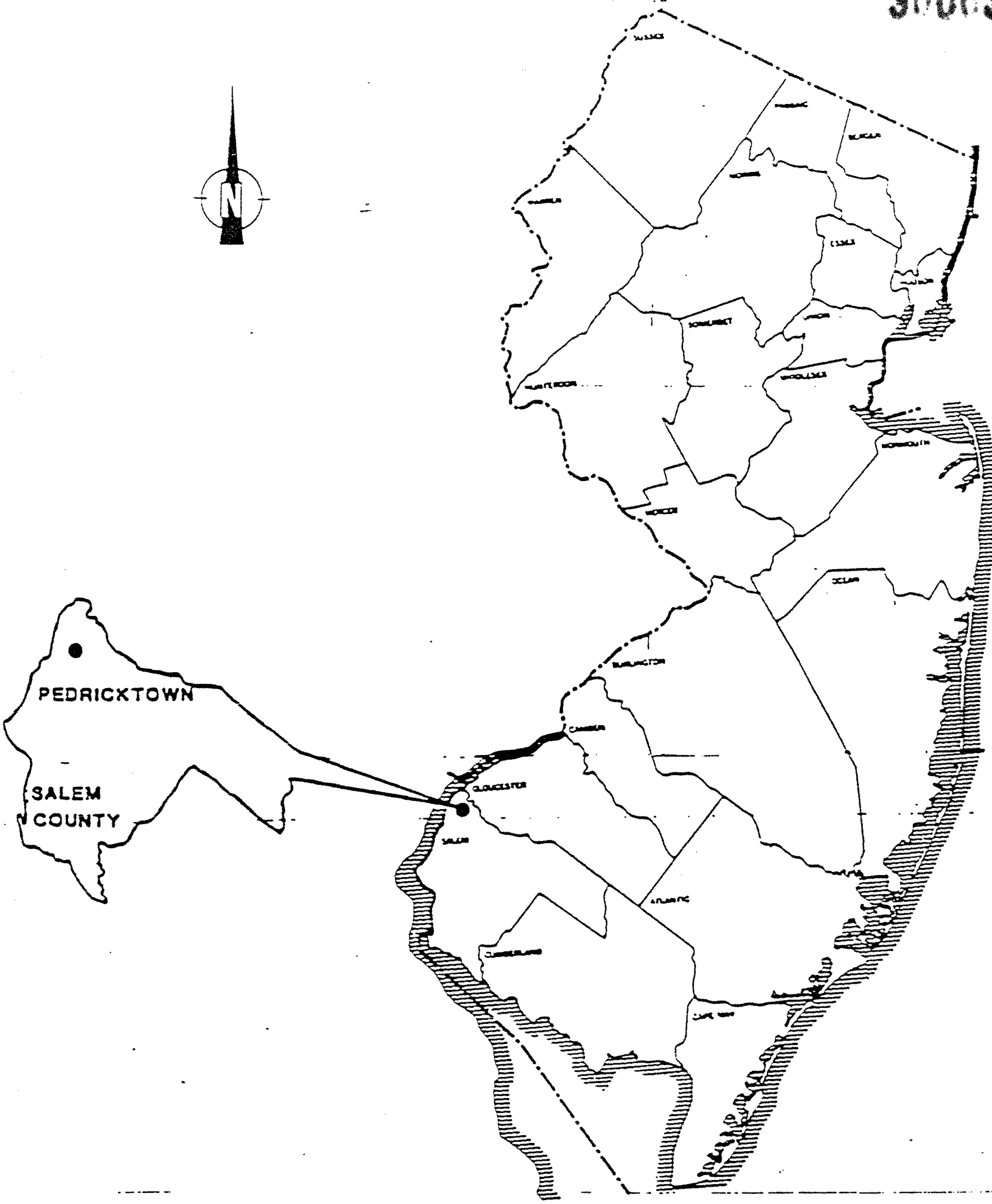
Anthony DeFeo
Penns Grove-Pedricktown Road
Pedricktown, NJ 08067

Cookie Drabold
25 Cherry Street
Pedricktown, NJ 08067
Deberry Griffin
Penns Grove-Pedricktown Road
Pedricktown, NJ 08067

APPENDIX I

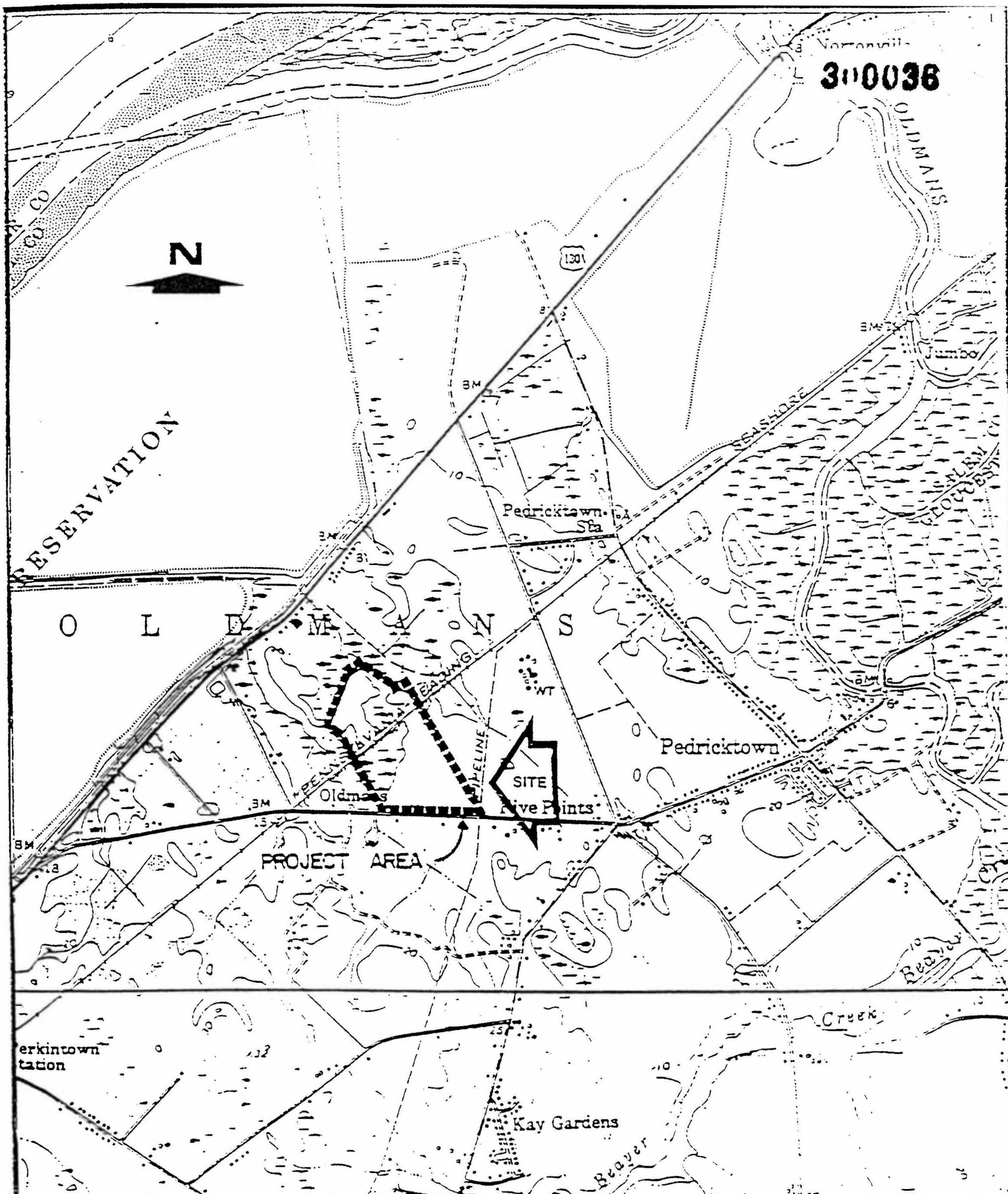
FIGURES

300035



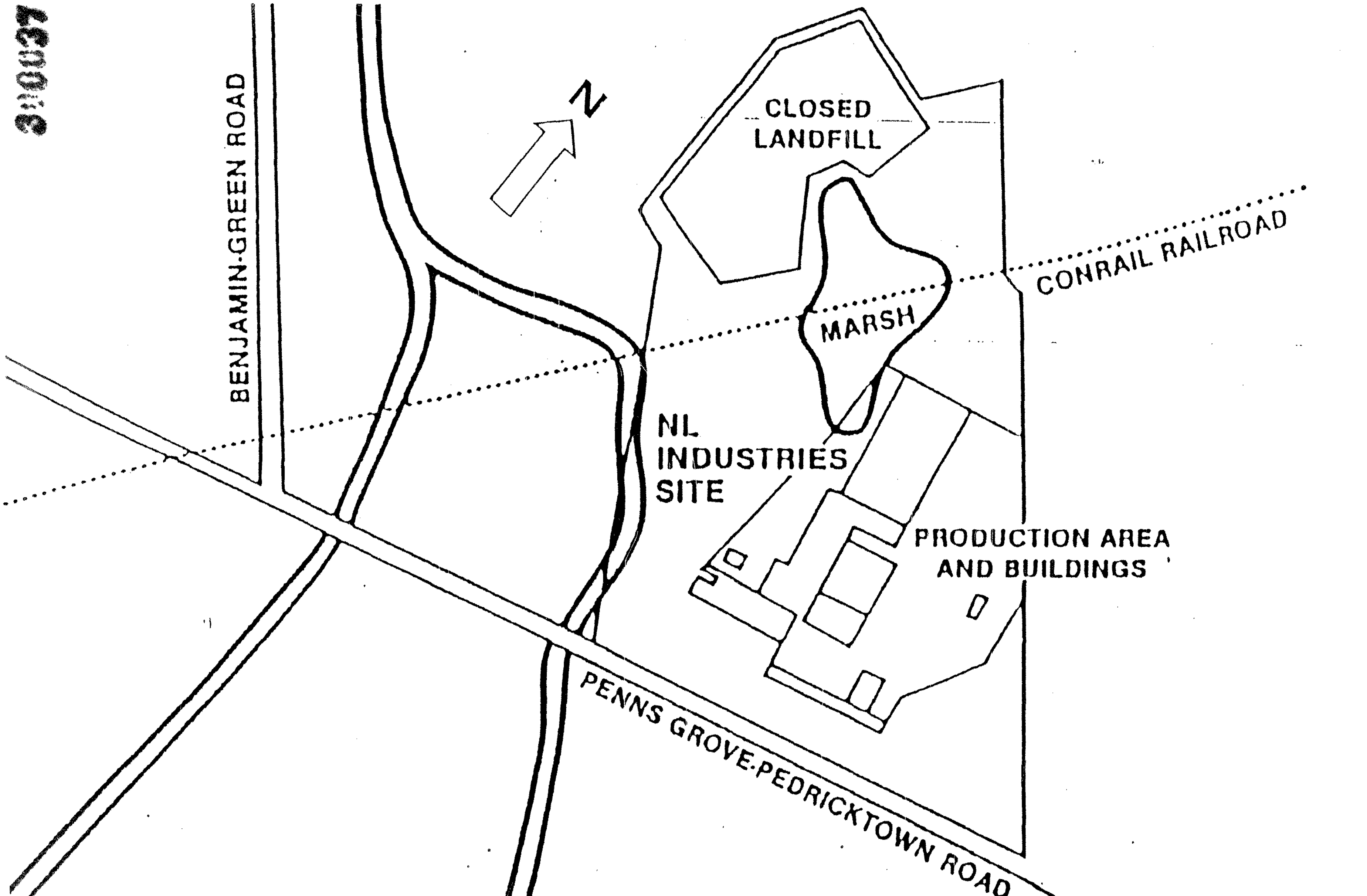
EPA PM DOMINACH	NL INDUSTRIES SITE COUNTY LOCATION M
TAT PM PERERA	FIGURE 1

300036



EPA PM DOMINACH	NL INDUSTRIES SITE LOCATION MAP
TAT PM PERERA	FIGURE 2

3!!0037



EPA PM DOMINACH	NL INDUSTRIES SITE MAP
TAT PM PERERA	FIGURE 3

APPENDIX II

HAZARDOUS PROPERTIES OF INORGANIC LEAD

Points of Attack: Kidneys, blood, gingival tissue, gastrointestinal system, central nervous system.

Medical Surveillance: In preemployment physical examinations, special attention is given to neurologic and renal disease and baseline blood lead levels. Periodic physical examinations should include hemoglobin determinations, tests for blood lead levels, and evaluation of any gastrointestinal or neurologic symptoms. Renal function should be evaluated.

Periodic evaluation of blood lead levels are widely used as an indicator of increased or excessive lead absorption. Other indicators are urine coproporphyrin and delta aminolevulinic acid (ALA). Erythrocytic protoporphyrin determinations may also be helpful. See also reference (10).

First Aid: If this chemical gets into the eyes, irrigate immediately. If this chemical contacts the skin, flush with soap promptly. If a person breathes in large amounts of this chemical, move the exposed person to fresh air at once and perform artificial respiration. When this chemical has been swallowed, get medical attention. Give large quantities of water and induce vomiting. Do not make an unconscious person vomit.

Personal Protective Methods: Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear eye protection to prevent any reasonable probability of eye contact. Employees should wash daily at the end of each work shift. Remove nonimpervious clothing immediately if wet or contaminated.

Respirator Selection:

$0.5\ mg/m^3$: HiEP
$2.5\ mg/m^3$: HiEPF
$50\ mg/m^3$: PAPHIE/SA:PD,PP,CF
$100\ mg/m^3$: SAF:PD,PP,CF

Disposal Method Suggested: Lead oxide—chemical conversion to the sulfide or carbonate followed by collection of the precipitate and lead recovery via smelting operations. Landfilling of the oxide is also an acceptable procedure (A-31). Alternatively, it may be dissolved in HNO_3, precipitated as the sulfide and returned to a supplier for reprocessing (A-38). Processes for recovering and recycling lead from a number of industrial waste sources have been described (A-57).

Incompatibilities: Strong oxidizers, hydrogen peroxide, active metals—sodium, potassium.

Permissible Exposure Limits in Air: The Federal (OSHA) standard for lead and its inorganic compounds was 0.2 mg/m³ as a time-weighted average. The EPA has set a national ambient air quality standard for lead of 1.5 mg/m³ on a 3-month average basis. The NIOSH Criteria Document recommends a time-weighted average value of 0.15 mg Pb/m³. On November 14, 1978, OSHA set a final standard in which industries will be given 1 to 3 years to reach 0.1 mg (100 ug)/m³ level and from 1 to 10 years to reach a final standard of 0.05 mg (50 ug)/m³. ACGIH as of 1983/84 has set a TWA of 0.15 mg/m³ (as Pb) and an STEL of 0.45 mg/m³. Lead chromate is assigned a TWA of 0.05 mg/m³ by ACGIH (1983/84) with the notation that it is a substance suspect of carcinogenic potential for man.

Determination in Air: Collection on a filter, workup with nitric acid, analysis by atomic absorption spectrometry. See NIOSH Methods, Set C. See also reference (A-10).

Permissible Concentration in Water: To protect freshwater aquatic life–

$$e^{(2.35 \ln (\text{hardness}) - 9.48)}$$

never to exceed

$$e^{(1.22 \ln (\text{hardness}) - 0.47)}$$

To protect saltwater aquatic life—668 µg/ℓ on an acute toxicity basis and 25 µg/ℓ on a chronic basis. To protect human health—50 µg/ℓ (USEPA).

Various organizations worldwide have set other standards for lead in drinking water as follows (A-65): South African Bureau of Standards, 150 µg/ℓ; World Health Organization, 100 µg/ℓ; Federal Republic of Germany (1975), 40 µg/ℓ.

Determination in Water: Digestion followed by atomic absorption or by colorimetric (dithizone) analysis or by inductively coupled plasma (ICP) optical emission spectrometry. That gives total lead; dissolved lead may be determined by 0.45 micron filtration prior to such analyses.

Routes of Entry: Ingestion of dust, inhalation of dust or fume, skin and eye contact.

Harmful Effects and Symptoms: *Local* – None.

Systemic – The early effects of lead poisoning are nonspecific and, except by laboratory testing, are difficult to distinguish from the symptoms of minor seasonal illnesses. The symptoms are decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, digestive symptoms (particularly constipation), abdominal pains, and decreased appetite. These symptoms are reversible and complete recovery is possible.

Later findings include anemia, pallor, a "lead line" on the gums, and decreased hand-grip strength. Lead colic produces an intense periodic abdominal cramping associated with severe constipation and, occasionally, nausea and vomiting. Alcohol ingestion and physical exertion may precipitate these symptoms. The peripheral nerve affected most frequently is the radial nerve. This will occur only with exposure over an extended period of time and causes "wrist drop." Recovery is slow and not always complete. When the central nervous system is affected, it is usually due to the ingestion or inhalation of large amounts of lead. This results in severe headache, convulsions, coma, delirium, and possibly death. The kidneys can also be damaged after long periods of exposure to lead, with loss of kidney function and progressive azotemia.

Because of more efficient material handling methods and biological monitoring, serious cases of lead poisoning are rare in industry today.

REGION 2

SITE: N.L. Industries

LOCATION: Pedricktown, New Jersey

DATES: 1/9/89 - 5/31/89

DESCRIPTION: This site is an NPL site consisting of an abandoned secondary lead smelting facility and adjoining landfill. Approximately 2,000 cu. yds. of residual slag containing several different heavy metals are stockpiled on site. The PRP, N.L. Industries, was cited with 46 violations of the Clean Air Act and Clean Water Act between 1973 and 1980. The site overlies the Cape May aquifer and borders Oldmans Creek, a tributary of the Delaware River.

The removal action was prompted by public concerns raised during the comment period of the RI/FS. Specifically, EPA was requested to limit the migration of the contaminants and build a perimeter fence extension to safely enclose the site .

MATERIALS: Lead, chromium, antimony, and ferrous sulfate.

THREATS: Direct contact, ingestion, inhalation, fire/explosion, soil and groundwater contamination.

ACTIONS: An extension to the existing fence was installed to fully enclose the site and prevent public access. The slag piles on site were encapsulated with varying dilutions of an oil resin to prevent contaminant migration into the surrounding air and water supply.

DISPOSAL: None.

PROBLEMS ENCOUNTERED/RECOMMENDATIONS:

1. Use of an Educator. Rather than using a drum pump for emptying the stock solution from a drum, the OSC suggests using an educator to eliminate the time required to prepare the dilated surfacing agent.

2. Monitor Effectiveness of the Encapsulation. Periodic site visits should be made to assess the encapsulation durability after exposure to varying environmental conditions.

COST:

ERCS	$43,005.00
TAT	14,700.00
EPA	19,850.00
Total Project Cost	$77,555.00

OSC: Eugene G. Dominach
FTS: 8-340-6666

1003E006110.61

NL Industries, Inc.

Pedricktown, New Jersey

EPA
Region 2

June 1988

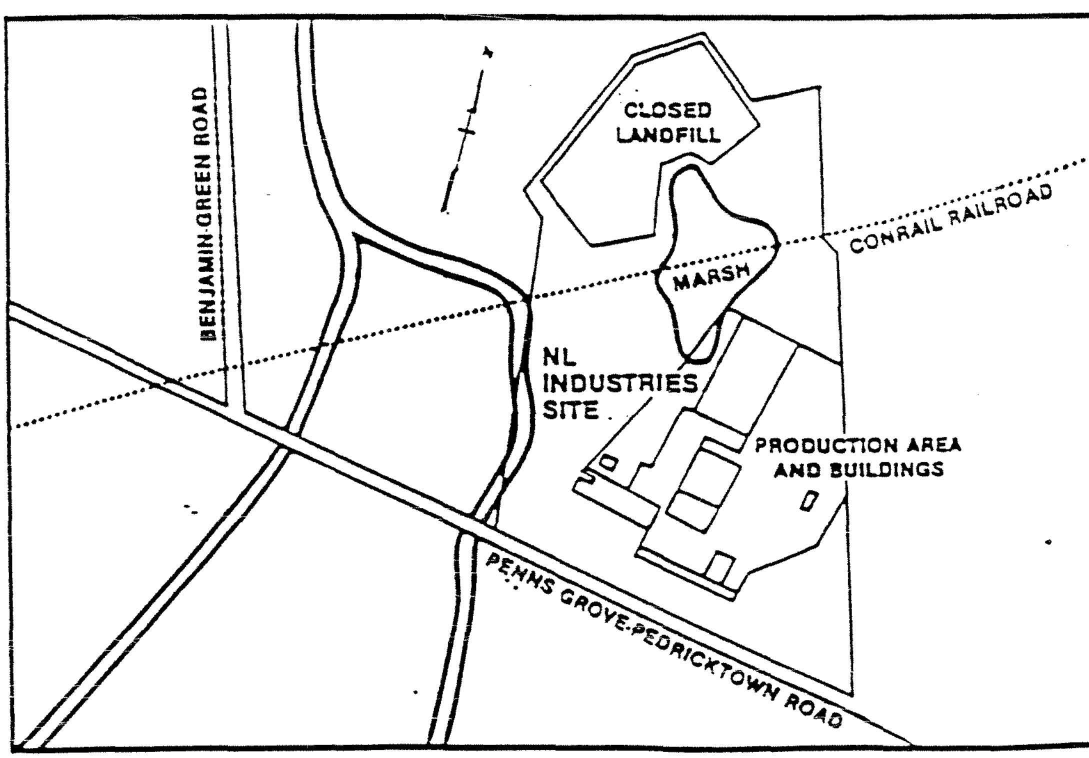
EPA TO DIRECT LONG-TERM INVESTIGATION AT THE NL INDUSTRIES, INC. SITE

NL Industries, Inc., under an Administrative Order on Consent with the EPA, has retained the environmental consulting firm, O'Brien and Gere Engineers, Inc., to conduct a long-term investigation at the NL Industries, Inc. site. This investigation will further identify the extent and potential public health and environmental effects of contamination from the site. All work at the site will be carefully monitored and reviewed by EPA. This fact sheet is part of EPA's ongoing effort to inform the public of current and future activities at this site.

SITE BACKGROUND

The NL Industries site is located off Penns Grove-Pedricktown Road in Pedricktown (also called Oldmans Township), Salem County, New Jersey. Situated in an industrial section in a predominantly rural area, the 46-acre site contains a closed landfill and a former lead recycling plant, also known as a secondary lead smelter. Railroad tracks, owned by the Conrail Railroad, run directly through the center of the property. (See figure below.)

NL INDUSTRIES, INC. SITE



Operations began at the site in 1972, when NL Industries opened a plant to recycle lead from spent automotive batteries. The batteries were crushed, with the sulfuric acid drained and removed for treatment. The lead plates were removed and smelted in a blast furnace. The rubber by-products were buried in an on-site landfill.

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In February 1983, the plant was sold to National Smelting of New Jersey, Inc. (NSNJ), and smelting operations were recommenced. NSNJ, its parent company National Smelting and Refining Co., Inc., NL Industries and NJDEP entered into an Amended Administrative Consent Order (AACO) that same month. The AACO amended the Administrative Consent Order of October 1982, identifying which environmental obligations were the responsibility of NSNJ and which were the responsibility of NL Industries.

NSNJ ceased smelting operations in January 1984, and filed for bankruptcy in March 1984. The bankruptcy has subsequently been dismissed.

In December 1982, the site was placed on the National Priorities List (NPL), a list of the nation's toxic waste sites requiring remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or "Superfund"). Under a consent agreement signed by NL Industries with EPA in April 1986, NL Industries assumed responsibility for conducting the long-term investigation at the site.

CURRENT AND FUTURE ACTIVITIES

The long-term cleanup action at the NL Industries site, as at other Superfund sites, will begin with an extensive study known as the Remedial Investigation/Feasibility Study (RI/FS). The purpose of the RI, the first part of the process, is to define the nature and extent of contamination from the site. The second part of the process, the FS, uses the data collected in the RI to identify and evaluate alternatives for addressing the site contamination.

The RI at the NL Industries site will use a two-phased approach. Phase I of the RI will provide initial characterization of the nature and extent of on-site and off-site contamination. This will include sampling of on-site wells and selected off-site residential wells, and sampling of surface water, soil, sediment, slag and waste materials. Phase I will also include the installation of two on-site monitoring wells. The purpose of the second phase of the RI will be to conduct additional groundwater and surface water sampling to further characterize the site. Sampling of nearby residential and industrial properties will take place during each phase of the RI.

PUBLIC INFORMATION MEETING SCHEDULED FOR JUNE 29

On June 29, 1988, at 7 p.m., EPA will conduct a public information meeting to discuss the RI/FS Work Plan, explain the RI/FS process, and respond to specific questions from local officials and interested residents. The meeting will be held at the following location:

Oldmans Middle School
Freed Road
Pedricktown, New Jersey 08067

FURTHER INFORMATION

For additional information concerning EPA activities at the NL Industries site, please contact the EPA Project Manager, Kerwin Donato, at (212) 264-5397 or Isabel Funcia, the EPA Community Relations Specialist at (212) 264-2515.

As part of EPA's responsibility and commitment to the Superfund Program, community relations activities will be ongoing throughout the duration of the RI/FS. EPA has established information repositories where relevant site documents describing technical work at the site, and fact sheets, which provide updated information regarding on-site activities, will be made available for public review.

Copies of the RI/FS Work Plan and other site documents are available at the following information repositories:

Penns Grove-Carneys Point Library
South Broad Street
Penns Grove, New Jersey 08069
Hours: 10 a.m. to 1 p.m. (M - SAT)
3 p.m. to 8 p.m. (M - W)
3 p.m. to 6 p.m. (TH - FR)

Oldmans Middle School
Freed Road
Pedricktown, New Jersey 08067
Hours: 8 a.m. to 4 p.m. (M - FR)

400045A

State asked to probe NL site

Cleanup damages sought

By KAREN ZABEL
Staff Writer

TRENTON — Assemblymen Jack Collins and Gary Stuhltrager, R-3, have called on Governor Florio's newly appointed environmental prosecutor to investigate the National Lead Industries toxic waste site located in Oldmans Township, "with intent to prosecute those responsible" for the site and its consequences.

In a release issued from Stuhltrager's office late Friday afternoon, the assemblymen call for "prosecution on behalf of the township and the residents."

"By that, we mean to assist Oldmans in an attempt to restore their community to the healthy environment it was prior to the existence of NL Industries," read a statement by Stuhltrager.

NL Industries owned and operated a lead smelting operation in the township from 1972 until 1982, when the operation was sold to the now-defunct company, National Smelting of New Jersey. The plant was closed soon after when National Smelting went bankrupt.

But during the dozen or so years that it operated, NL Industries became the bane of environmental lobbyists, garnering 46 state and federal violations and eventually landing on the National Priorities List, a grouping of the nation's worst toxic waste sites, also known as the Superfund list.

Township residents have complained of severe health problems and pitting of their aluminum siding, due allegedly to airborne lead escaping from the plant while it was operating.

Tons of the plant's waste still remain on the site.

"The ongoing thing with National Lead is, who's going to pay for the clean up," Collins said during a phone interview Saturday. "We want the prosecutor to see if, when the owners bailed out of the area, there were any violations of New Jersey laws.

"We feel that this site is a prime candidate for investigation," he continued. "It's on the Superfund list and it's located within a community that has no money to pay for the clean up. It's a case where the owners have just disappeared."

Collins said he feels he and Stuhl-

(See NL, page A-8)

NL

(Continued from page A-1)

trager are ideally suited to make the request.

"We have a double hit here," said Collins. "I'm on the Assembly's environmental committee and Gary is on the committee for law and public safety, so we're prepared in both areas of the case."

The assemblyman added that the recent appointment of State Environmental Prosecutor Steven J. Madonna is "very welcome."

"Both Gary and I feel that this is an ideal spot for the environmental prosecutor to get his feet wet," Collins added. "We hope very much that he responds to our request."

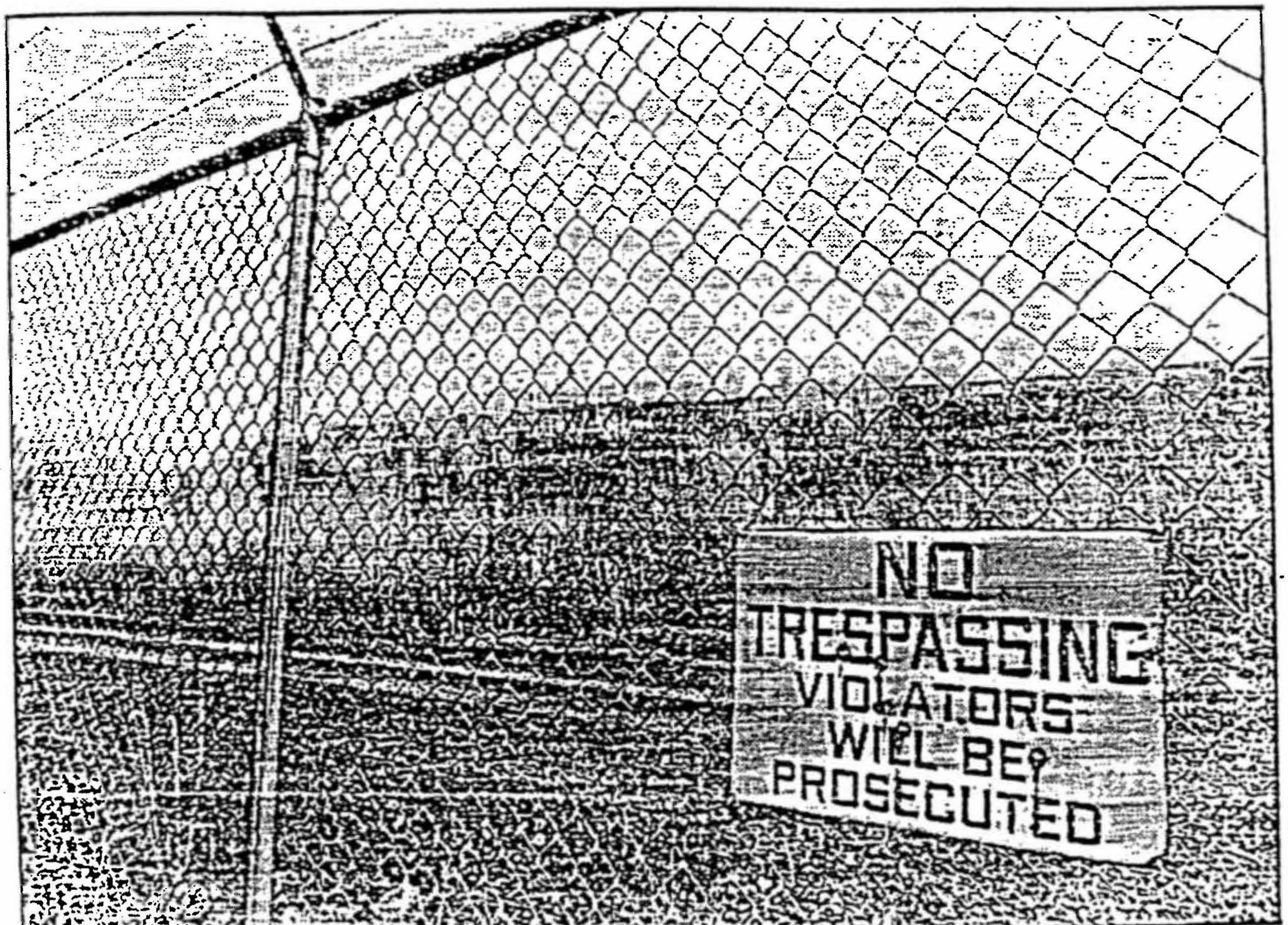
Legislation proposed by Collins and currently before the state senate requires that the DEP prepare a health study of its future clean up sites, barring those on the federal Superfund list.

"The NL site fails the criteria set forth by my legislation in two ways," Collins said. "First, it's a Superfund site, and secondly, my legislation would only be effective for future sites, not those already in existence.

"But that doesn't mean we can't make the request," he added.

Oldmans' Dilemma:

The NL Industries Toxic Waste Site



Staff photo by Steve Goldstein

A sign warns trespassers to keep out of the landfill at the NL Industries site in Oldmans Township.

Finally, NL cleanup appears on track

300046

By BRYON KURZENABE
Staff Writer

Although the federal Environmental Protection Agency will not devise a permanent cleanup solution for the NL Industries toxic waste site until 1993, Pedricktown-area residents are hoping the action will result in the leveling of the eyesore which has plagued the rural community for nearly two decades.

As one travels past the 46-acre site on Penns Grove-Pedricktown Road, it is not plainly evident that the facility is the 19th most hazardous location in New Jersey and the 125th in the United States.

"When you just drive by it you can't feel it. But when you enter those gates you see how serious it is," said township Mayor Rose Swaverly.

More than 1 million gallons of contaminated surface water, 2,000 tons of leaden slag, a plethora of heaps and piles, and a "mountain" of a landfill filled with slag and battery parts sprawl over the decaying facility.

But, according to the EPA, the most harmful elements of the Superfund site may be barely visible: soil and groundwater contaminants, landfill leachate and a plume of harmful contamination crawling through the site's underlying Cape May aquifer.

While removal actions at the site have been long in coming, it appears they have finally arrived and that a rejuvenation of public interest has budged the bureaucratic boulder down a swift path to permanent cleanup.

Last November, the agency

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recoated slag piles with a bituminous asphalt layer to reduce the migration of hazardous materials due to wind and rain. Signs and chain link fence gates were erected to deter trespassers from all major equipment.

The leaking roof of the storage building, which houses a large pile of lead oxide, was also repaired.

The EPA found several industries it would not identify (one in upstate New York) to recycle an estimated 40,000 pounds of hazardous materials. These included sodium hydroxide, sodium nitrate, arsenic, sulfur, sodium metal, red phosphorus, copper sulfate, four gas cylinders, 350 gallons of waste oil, castable cement, insulating cement, fire clay and calcium oxide.

"We spent a lot of effort in trying to find (businesses to recycle the waste). A lot were a little hesitant at first because they were taking material from a hazardous waste site," said Eugene Dominach of the EPA's Edison Field Office.

"Some (containers of hazardous material) had released their contents already, and others were all ready to do it. Instead of putting this material into a hazardous waste landfill, we were able to recycle it," Dominach said.

Six bags of asbestos were disposed of in the closed municipal landfill — which the EPA is also investigating as a possible Superfund candidate — along with a radioactive flowmeter, the sole source of on-site radioactivity.

Still, approximately 20 cubic yards of contaminated clothing and debris, two 55-gallon drums of unknown materials, one container of red phosphorus, 10 bags of sulfur and three 55-gallon drums of combustibles were left temporarily on the site.

There are approximately 1 million gallons of surface water throughout the 46 acres, according to Dominach, who said that National Smelting of New Jersey had blocked up all the drains in the site as a measure to save water for its cooling process, including the lagoon known as Brinkman's Pond.

"This stuff has been leaching lead from the contaminants on the site," said Dominach. "The water becomes contaminated and, when the water flows off the site and into the (Oldmans) Creek, it is contaminating the creek. And that water goes to the Delaware River," he said.

"We've got this under study and hopefully, if we get the proper paperwork and the proper funding, we'll be able to do something in the last half of this year," Dominach said.

Water also has accumulated in two cellars underneath the main refining building. Although it is not known whether the accumulation is due to rain water or groundwater, it could surely be leaching heavily into the soil and aquifer, he added.

"It's low-level lead but it's something that we shouldn't allow to continue," said Dominach. "It's probably diminished over the years as the site washes itself."

A private contractor has been retained to extensively sample the contaminated materials — kiln slag, lead oxide piles, surface water and contaminated buildings — and evaluate the results prior to the release of a remedial investigation study on April 30. Both phases of remedial investigation sampling were completed last October.

"At this point, we pretty much know what we want to get rid of and that includes, of course, the slag piles and some lead oxide," said Dominach.

"The trace contaminants are the ones we're concerned about now," said Acting EPA Region 2 Administrator William Muszynski.

TODAY SUNBEAM, SALEM, NJ, THURSDAY, JANUARY 18, 1990, P. A-7

Who will fund the cleanup?

By BRYON KURZENABE
Staff Writer

While the U.S. Environmental Protection Agency conducts its remedial investigation of the NL Industries Superfund site and a permanent cleanup is about three years away, many are speculating as to how the prospective remedy will be funded.

The state Department of Environmental Protection currently holds in escrow $1.1 million for such actions — a sum collected by the agency under a 1982 administrative consent order and 1985 bankruptcy proceedures.

The EPA, which has assumed control of the site in Oldmans Township Pedricktown from the DEP, is already seeking reimbursement from the state for two removal actions it completed at the site last year.

Because federal tax dollars have been limited to $112,000 for the site and officials anticipate a cleanup price tag exceeding the $1.1 million in escrow, the EPA now faces the imminent task of wringing large sums of money from a reluctant NL Industries Inc. and a debt-ridden National Smelting and Refining Co.

"We're right now trying to obtain a lot of documents from the SEC (federal Securities and Exchange Commission) and bankruptcy proceedings to see if this company (NSR) is still viable and has a lot of assets. . . Once we do that we're going to have the attorney look into it" said EPA Project Enforcement Manager Kerwin Donato.

OLDMANS' DILEMMA: THE NL INDUSTRIES TOXIC WASTE SITE

Fifth of Six Parts

National Smelting and Refining purchased the secondary heavy metals smelting facility from NL Industries in 1983. A unit of the Standard Metals Corp., NSR renamed the plant National Smelting of New Jersey and operated for one year

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before it declared bankruptcy in March 1984.

The bankruptcy petition was subsequently denied due to concrete DEP evidence demonstrating highly toxic conditions and possible contamination emanating from the site.

In addition to NL Industries, NSR owners Robert Puckett, Edward Puckett and Standard Metals have been named as potentially responsible parties for various offenses at the toxic waste site.

"We haven't gotten the final figures yet and the (research) is not complete. If they don't exist and they don't have the money, there isn't much the EPA could do (to acquire additional funds)," Donato said.

Title to the site rests solely with NSNJ with the exception of a 1.4-acre parcel of unimproved land owned by Pagnotto's Inc., a firm about which nothing is known by officials except that it has the same Atlanta mailing address as NSNJ. The current market value of the plant is $440,000 when standing, $1,435,000 when in use.

"There's a lot of other loose ends out there . . . and the EPA had better step up its efforts to identify those companies and bring them into the decision-making process now," said U.S. Rep. William Hughes, D-2nd Dist., at a special inquiry into the site last July.

"NL does recognize that they were there and they're part of the problems and they have to be part of the solution . . . It has acknowledged a little more responsibility than just the landfill," Hughes said.

NL is under an EPA administrative consent order to fund a Remedial Investigation and Feasibility Study at an estimated cost of $1.1 million — an amount concurrent with the funds the DEP has in escrow. "The EPA really doesn't know how much it is costing NL because it is a private endeavor," Donato said.

If the RIFS draws conclusions suggesting that the companies are responsible for hazardous materials greater than current funds could address, the agency can either enter into another consent agreement or unilaterally order the site's cleanup through the courts.

"There's never, ever going to be enough money from the federal government to clean up all of these sites," according to Acting EPA Region 2 Administrator William Muszynski.

"The only way to go is to get private industry involved (with the funding)," concurred township Environmental Committee Chairman Bob Chevreuil.

Donato said that the two existing administrative consent orders between the agency and NL and NSNJ set a precedent of cooperation, one that will hopefully be extended to future negotiations.

However, if a potentially responsible party is discovered to be liable and is unwilling to provide the necessary funds, a court battle becomes a real prospect, according to Donato.

"With a lot of sites, it does go to court when we seek reimbursement and force (potentially responsible parties) to pay for the cleanup," he said.

"Multiple industries result in very complicated negotiations," said Muszynski.

Stephen Holt, a senior environmental engineer for NL, said he cannot comment on prospects for cooperation or a court battle.

"I can't predict the future. What is going to transpire is we're going to complete the RIFS and the EPA has to establish a Record of Discovery and that will determine what has to be done," he said.

"There are other responsible parties according to the law. I cannot comment further on it," Holt added.

The EPA may have lost an opportunity to dispose of the slag at the NL site, according to a 1988 letter from the DEP. Another refining company had approached NL in 1985 to remove the 2,000 tons and recover the material within it, the letter reported.

Donato said the refining company's proposal was rejected because he believed material contained in a Superfund site could not be displaced for any reason, a fallacy according to Muszynski.

Local officials are incensed that both government and company officials allowed looters to scour the abandoned site and remove valuable equipment shortly after it ceased operations. They believe an ideal source of revenue was wasted due to governmental and corporate negligence.

"There were guys stealing something that could have been used to pay for things," said Pedricktown resident James McCourt, who described stolen items ranging from electric motors the size of small stoves to large-scale equipment.

"Guys would come in at night and dismantle the place. That stuff could have been sold at an auction to go for some of the cleanup," said McCourt.

The township committee had considered foreclosing on the property and placing it up for sale, but the predominately rural community would then have become liable for the existing structures at the site.

Although blame has been cast largely upon NL Industries for its record of environmental abuses and government agencies for conducting such a lengthy probe, both residents and officials feel some of the responsibility rests with township officials in power at the time of the abuses.

"The township forefathers are at fault for not stopping this earlier, as far as I'm concerned," said current Mayor Rose Swaverly. "They didn't care and they weren't concerned enough and left the mess behind for other people to take care of."

Residents have subtly charged former officials with catering to the lead recycling company and virtually ignoring the pleas of residents who lived "on the *other* side of town."

"Most of the politicians before made a promise but they didn't come up with one quarter of it," said Mrs. Swaverly. "Their scope of the future didn't go too far."

"You can go back so far and the buck stops and nobody knows where," she said.

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Can EPA handle cleanup at NL?

OLDMANS' DILEMMA: THE NL INDUSTRIES TOXIC WASTE SITE

Fourth of Six Parts

By BRYON KURZENABE
Staff Writer

Are we cleaning up the mess or messing up the cleanup?

This seems to be the question many federal officials are asking today about the ability of the federal Environmental Protection Agency to implement Superfund, the Congressional program designed to study and clean up the nation's worst hazardous waste sites.

A prevalent view is that the site remediation process takes too long to complete and often devises fleeting solutions. Some are concerned that the EPA's emphasis on affixing legal responsibility often supercedes the fundamental protection of the environment.

After nine years and over $5 billion, Superfund has grown a great deal from its conceptual stages as established under the federal Comprehensive Emergency Response, Compensation and Liability Act of 1980.

Yet, is it *truly* working?

A 1988 report published by the federal Office of Technology Assessment Advisory Council weighed both praise and criticism about Superfund, reviewing in depth 10 sites from an original 100 it felt best represented the spectrum of the hundreds of sites the EPA encounters.

"Right now there are more questions than answers about diagnosing and fixing Superfund," said advisory council Director John H. Gibbons.

"Even while the public demands effective cleanups, nearly everyone speaking and writing about Superfund seems to feel that serious problems exist," purported Gibbons.

One thing is certain: Those who live near Superfund sites or pay for one want the cleanup to last forever.

Designed as an analytical aid to Congress in 1972, the OTA's basic function is to help legislators plan for the consequences of technological changes and to examine the many

(See NL, page A-8)

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(Continued from page A-1)

ways in which technology affects people's lives.

Initial determinations made by OTA suggest that Superfund is inconsistent in choosing permanently effective technologies that reduce "toxicity, mobility, or volume" of hazardous wastes, three criteria established under the Superfund Amendments and Reauthorization Act (SARA) of 1986. SARA strengthened CERCLA, the original Superfund statute.

The report also notes that land disposal and containment, two short-term technologies, are frequently used as remedial actions.

Thus, if the OTA's assessment is valid, the imminent remedial environmental engineering design for the NL Industries Superfund site in Oldmans Township bears watching.

Although the EPA is roughly two years away from devising the cleanup technologies that will best solve the contamination problems at the site in Oldmans Township, there are questions among officials whether attempts to keep costs down will impair the effectiveness of the cleanup.

Since both government and industry want to keep cleanup costs as low as possible, there is a tradeoff between goals to protect the environment and the cost of the remedy selected, according to the report.

P.J. Haller, in an article published in *Hazardous Materials* (Jan./Feb. 1988), questions the subjective judgment the EPA uses to make cost effectiveness decisions.

How clean is clean? What are the factors that make the difference between a "bandage" and a "gold-plated" cleanup?

The report notes that a lack of EPA consistency could foster a loss of public confidence in the government, in addition to creating greater harm to human health and the environment.

Due to unfulfilled promises and a lack of communication, Pedricktown residents (especially those neighboring the site) have already lost respect for both the EPA and the state Department of Environmental Protection.

The OTA finds that the EPA's loose, decentralized hierarchy makes it prone to encounter difficulties in trying to implement an effective and efficient Superfund program.

"In principle, flexibility can lead to benefits. But the case studies show the Superfund program as a loose assembly of disparate working parts. It is a system of divided responsibilities and dispersed operations," said the report.

"The need for cleanups, the newness of the technological challenge and the growth of Superfund mask the inexperience and mobility of the work force," it stated.

Although Pedricktown residents have condemned the EPA, the case studies in the report militate in favor of the EPA's Region II, the same region responsible for the NL site.

The OTA believes the EPA acts frequently on incorrect information, but both the EPA and DEP have conducted extensive groundwater testing at the NL site and will not release results until they have been validated for accuracy.

Specific groundwater monitoring requirements are particularly important, according to *Groundwater Monitoring Research* (1987), because "low sampling frequency coupled with the generally smaller sampling networks suggest that efforts to charactrize groundwter contamination at Superfund sites may be inadequate."

Lines of communication between the township and the agency were fortified last July when the EPA pledged a new openness and conducted an uncharacteristic round of well testing at the request of township Mayor Rose Swaverly — two concerns rarely uncovered by the OTA.

And the agency's Edison Field Office has just completed removing some of the most harmful materials at the site solely from a $112,000 Superfund account designated for Pedricktown.

According to the report, cleanup costs can vary widely from several hundred thousand dollars to tens of millions. Data on 15 of the cleanups reviewed in the OTA study indicate that total cleanup costs can reach $500,000 to $1 million per acre of land.

If this data is correct, final remediation at the NL Industries site could cost between $23 million and $46 million.

OTA concludes that having too little or too much contamination at a site is a detriment: Both mean high costs for treatment as opposed to non-treatment.

EPA officials will not say if the NL site's 2,000 tons of leaden slag constitute "too much" waste.

In its evaluation of the 10 case studies, the OTA studied the EPA Record of Discovery (ROD), the centerpiece against which the agency's decision-making must be judged by the courts. (Following this spring's completion of a Remedial Investigation and Feasibility Study, the agency will soon begin a ROD for the site.)

The report, however, does not address the consistency of cleanup effectiveness when compared with ROD goals because so few remedies have been implemented throughout Superfund's short history.

So, what does the future hold for Pedricktown?

Following the EPA's formulation of a ROD, the local public is granted a 30-day period in which to evaluate the proposed remedy and offer suggestions or comments.

The report cites this period as critical because both the agency's and the public attention are focused on the true function of Superfund: Environmental protection.

Tomorrow: Who is responsible for the NL cleanup.

Did NL stage buying plant?

By BRYON KURZENABE
Staff Writer

OLDMANS' DILEMMA: THE NL INDUSTRIES TOXIC WASTE SITE

Third of A Six-Part Series

Allegations have arisen among Pedricktown residents and government officials who prefer anonymity that NL Industries Inc. staged the purchase of its secondary smelting facility in 1983 in order to escape financial responsibility for more than a decade of environmental abuses.

NL Industries operated the plant from 1972 to 1982, a period during which it was cited 46 times by the state Department of Environmental Protection and shut down twice due to illegal toxic emissions from its lead recycling process.

Although the site had been named during NL's last operating year to the National Priorities List, a grouping of the most hazardous sites in the country, the facility was sold in 1983 to the National Smelting and Refining Company, a unit of the Standard Metals Corp., which renamed the plant National Smelting of New Jersey.

Despite public outcry from Pedricktown residents, an ongoing investigation by the state Attorney General started at the request of the governor (but stopped after the sale) and concrete evidence showing severe environmental contamination, the conditions of the sale were approved by the state Economic Development Authority.

The EDA subsequently authorized $6.6 million in tax-exempt state industrial bonds to aid NSNJ. (The plant was purchased for $3.9 million and the additional $2.7 million was slated for immediate cleanup and monitoring programs.)

The EDA claims it acted upon the recommendations of the DEP, which saw the sale as an opportunity to conduct a slow but consistent cleanup of the existing soil, surface water and groundwater contamination through an annual generation of funds from a viable company.

However, in less than a year, NSNJ claimed a shortage of raw materials and financial troubles had forced the plant to close, eventually declaring bankruptcy.

The bankruptcy has since been denied, but local officials feel it was a premeditated attempt by NSNJ to relinquish liability through insolvency, while NL Industries' liability

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appeared lessened and relegated to the closed on-site landfill.

"It appeared as though the DEP accommodated National Lead," said Edward Rosinski, a retired chemical engineer in Pedricktown who almost single-handedly launched a campaign to educate the township and pressure the state to shut down the deficient facility.

Rosinski testified before the EDA against approval of the sale but could not sway its members to act in his favor.

"We think it was a maneuver (by NL) to corporately isolate itself from the liability," agreed township Emergency Management Coordinator Samuel Picken.

NL Industries officials admit the timing of the events could provoke one to believe they were internally contrived, but they stress heavily that the DEP — a public agency — was directly involved in the sale and that both companies were acting in their separate financial interests.

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Staff photo by Steve Goldstein

EPA officials and contracted personnel were at the NL site in November to begin cleanup.

"The company did not get out of the business to avoid a liability ... It wasn't an internal paper transaction," according to Stephen Holt, NL's site manager of environmental control and safety.

"A consent order was signed between NL, the DEP and the new owners (NSNJ) to make sure environmental conditions were addressed. It was nothing done without their knowledge," Holt said.

The sale was finalized on Feb. 10, 1983, when NL, NSNJ and the DEP entered into an amended administrative consent order in which the new company accepted liability for all ground and surface water contamination emanating from the facility. The agreement did not cover contamination from the closed landfill, which was still under NL's control.

"Prior to the sale in 1979, NL Industries had several similar plants located throughout the country and due to economic reasons, they sold all the metal division's facilities ... (at levels) where they did not get their asking price," according to Holt, contending the timing of the sale was in NL's best financial interests.

Although new letterhead donned company correspondence sent to the township, the faces were the same. Some of the administrative personnel who were employed by NL also worked for NSNJ.

"NSNJ supposedly bought that off of NL ... They had managers that worked for NL. I don't remember their names, but these (NSNJ) managers all came to our homes, but I told them that, 'I think you guys are all part of NL,'" said Nicholas Finocchio of Benjamin Green Road.

Holt acknowledged that people had worked for both companies — but at separate intervals.

"There were several people that worked for NSNJ that had formerly worked with NL. Several people had left NL employment prior to 1978 and worked at other lead smelters and then came back and worked (in Pedricktown) ... There were a few people who were still at the plant when the plant was sold to NSNJ," Holt said.

"When the plant was sold (to NSNJ) there were only five people there and four of them were picked up by the new owners. But the top management of NSNJ were not working for NL at the time of the sale and hadn't worked for NL for several years prior to the sale. I'm very aware that some of the players have been recognized as being there before," he said.

A state official who did wish to be identified believes the sale could have been internally contrived, but said pursuing that angle would be a waste of energy.

The contamination is being addressed with the resources currently available from the EPA, which can force both companies to appropriate more money for the task, he said.

"They're all walking away and just letting some dippy lawyer (Holt) control the whole thing. And he's only working for one person, and he works for NL. So what are we going to get done?" asked James McCourt, who lives on U.S. Route 130.

"I think, as a company itself, I think it stinks. Their sole intention is they go to an area and they operate for so long until they get pushed out because of pollution," Finocchio said.

"I believe there is (a connection). Nobody can tell me any different," he concluded.

Tomorrow: Are we cleaning up the mess or are we messing up the

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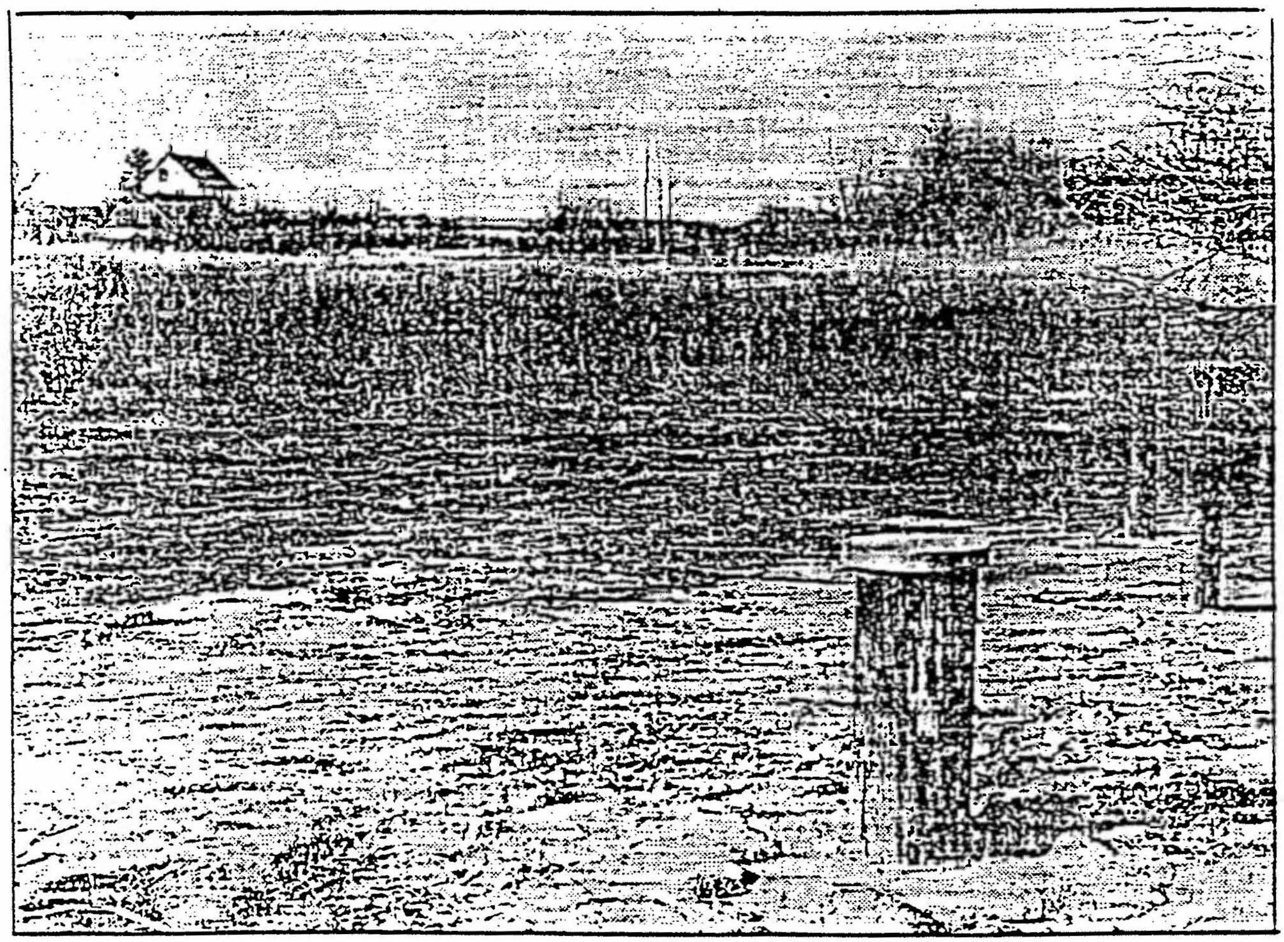
OLDMANS' DILEMMA: THE NL INDUSTRIES TOXIC WASTE SITE

Second of A Six-Part Series



Staff photo by Steve Goldstein

One of a cluster of wells installed to determine the level of contamination near Route 130.

TODAY'S SUNBEAM, SALEM, NJ, MONDAY, JANUARY 15, 1990, p. A-7.

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Oldmans' Dilemma:

The NL Industries Toxic Waste Site

NL and residents differed on image

By BRYON KURZENABE
Staff Writer

If one asks the homeowners neighboring the NL Industries hazardous waste site, they will claim it was the lead recycler's intention all along to reap what it could and leave the waste behind.

Pure and simple.

But NL Industries Inc. claims it was more than accommodating when it replaced residents' aluminum siding and installed water lines down an adjacent street, despite charges that other industry in the area had contributed to the overall contamination outside the plant's confines.

Research into the company, however, uncovers a current list of defense litigation which seems to contradict NL's self-image of social responsibility.

Some of the company's current and former facilities, including several ...ested metals facilities and former ...ning locations, are being sued for environmental abuses arising out of industrial waste disposal practices and deficient mining activities.

Organized as a corporation in New Jersey in 1891, NL Industries is a holding company with its continuing operations conducted principally through a wholly owned subsidiary entitled NL Chemicals Inc.

NL has also been named a potentially responsible party in many governmental and private actions, ranging from investigations to litigation, associated with hazardous waste sites and former mining locations, some of which are on the U.S. Environmental Protection Agency's Superfund National Priorities List.

In March 1986, the attorney general for Ohio filed a suit against National Lead of Ohio — a subsidiary of NL Industries — for environmental abuses at a 1,000-acre uranium foundry it operated 34 years for the U.S. Department of Energy in Fernald, Ohio.

The suit seeks $206 million in reimbursements for alleged past and future cleanup costs, $205 million for alleged damage to natural resources plus civil penalties of up to $35,000 per day for alleged past or continuing violations.

Entitled the Feed Materials Production Center, the facility did little to live up to its name. Residents thought for decades that the site produced grain for livestock. (The plant's water tower was even adorned with the *Ralston-Purina* logo of red and white checkered squares — much like the Pedricktown site which once featured the *Dutch Boy* paint logo.)

In 1984, residents filed a class action suit against the plant after it reported an emission of uranium dust. Once residents gained access to company

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NL

(Continued from page A-1)

files, residents discovered that hundreds of thousands of pounds of uranium were released through the plant's stacks and doors.

Although the DOE estimates that 500,000 pounds was released into the air, lawyers for residents suggest the figure is closer to 3 million pounds.

NLO also polluted a sizeable aquifer running under the plant and into the Great Miami River. The aquifer, which serves as the alternative drinking source for the community, is also polluted with highly toxic chemicals.

Ohio state officials believe the chemical danger at the plant actually outweighs the radioactive danger. With hundreds of chemical-hauling tankers lined up in rows, the site stores hydrous ammonia, radon, thorium and radioactive wastes and continues to be a dump site for similar chemicals.

It was finally declared a Superfund site and then taken over in 1986 by Westinghouse Materials Co. of Ohio (buying it from the DOE) for use in experimental cleanup techniques.

Residents recently were successful in a federal lawsuit against the company and were awarded approximately $75 million for suffering and reduced property values.

"If anybody was responsible for all the junk that happened there, NLO is the one who is responsible," said a Cincinnati government official who asked not to be identified.

Although the DOE has indemnified NLO for its actions due to the risks inherent in uranium processing, other corporations doing business in the area have filed suit against NLO for damage related to uranium releases.

NL denies any wrongdoing at its Ohio plant. It also rejects allegations contained in litigation filed by employees, neighbors and customers in 1988 against NL and other defendants which seeks compensatory and punitive damages in connection with injuries allegedly caused by paint containing lead supplied by a former division of the company (Sherwin-Williams).

The complaints allege, among other things, that the company acted in concert with other defendants to mislead the public regarding the risks of lead-based paints.

"The company believes these actions are without merit and intends to defend vigorously against them. Considering the company's previous involvement in the lead business, there can be no assurance that additional similar litigation will not be filed," states NL's 1988 10K annual report, the principal source of information established under the Securities Exchange Act of 1934.

The company is also involved in various environmental, contractual, and product liability claims.

Still, as is the practice of many companies, NL believes environmental concerns fall below the bottom line priorities of profits and expenditures.

"Some risk of environmental and other damage is inherent in certain operations and products of the company, as it is with other companies engaged in similar businesses," states the 10K report.

This belief is exemplified at the company's plant in Fredrikstad, Norway.

The principal environmental statute regulating the facility is the Norwegian Pollution Control Act of 1981, which granted NL a 10-year operating permit for the offshore disposal of tailings from its nearby ilmenite (an oxide of iron and titanium) mine.

The permit, which has almost run out, is being challenged by public interest groups who condemn the offshore disposal of tailings. Despite the opposition, NL believes that onshore disposal would increase its cost of operating the ilmenite mine and consequently funded its own study that supported the current practice of offshore dumping as opposed to the onshore alternative.

At a plant in Nordenham, West Germany, NL has dumped pigment effluents from a sulfate process — including sulfuric acid — into the North Sea.

NL's environmental negligence hit home in 1982 when it was dumping industrial waste from its defunct Sayreville plant into the New York Bight, a waterway separating southern New York state and northern New Jersey, according to Cindy Zipf, coordinator for Clean Ocean Action.

The CAA, a coalition of 140 organizations throughout New York and New Jersey, launched a campaign to focus public attention on this issue after the company willfully violated both its permit and a state compliance order, officials said.

"They finally stopped (Atlantic) ocean dumping, but only after they decided to drop their whole plant in New Jersey," said Zipf, who claims NL only stopped its practices after it readied a plant elsewhere and transferred its business. It was sold in 1971 to the Superior Air Products Company.

"In my mind they're the worst type of polluter because they had no intentions of complying ... They had a scheme all along. Not only the ocean bore the brunt of that, but so did the local waterways," said Zipf.

The company was also named in a 1986 state Superior Court lawsuit for allegedly leaving "elevated levels" of toluene, a hazardous chemical, along a 10-acre tract at the Sayreville site.

NL currently owns the Spencer Kellogg specialty resins operation in Newark, in addition to six other locations throughout the country.

The company has also recently announced plans for a new chloride process plant in Lake Charles, La., the first titanium dioxide pigment plant to be built in the United States since 1978. The plant is estimated to cost in excess of $200 million and will produce 80,000 metric tons of pigment each year.

NL has withdrawn from lead recyling and secondary smelting operations since it was the victim of a hostile takeover in 1986 by Dallas financier Harold Simmons.

The company's continuing operations are conducted in two business segments — titanium dioxide pigments and specialty chemicals.

Titanium dioxide pigments are used to impart whiteness, brightness and opacity to a wide variety of commonplace products, including paints, plastics, paper, fibers and ceramics. Specialty chemicals include rheological adddditives for suspension and viscosity control and specialty resins which function as binding agents that produce gloss and hardness.

NL produced 309,000 metric tons of titanium dioxide pigments in 1988, the world's fourth largest producer, with an estimated 11 percent share of the worldwide market.

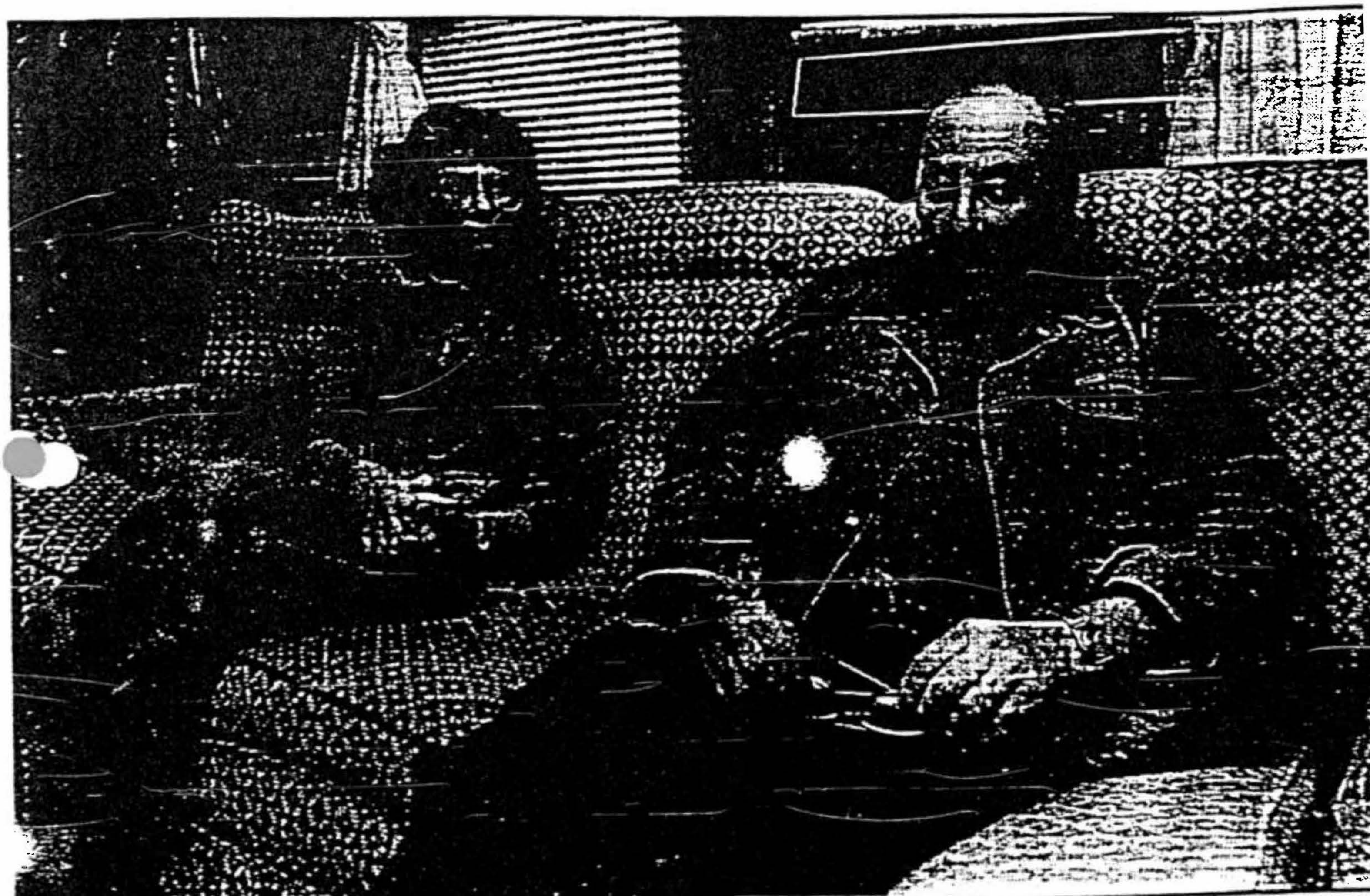
Tomorrow: A look at the controversial sale of NL's plant to National Smelting of N.J.

TODAY'S SUNBEAM, SALEM, NJ. SUNDAY JANUARY 14, 1990, A-6

300055

Oldmans' Dilemma:

The NL Industries Toxic Waste Site



Staff photo by Steve Geid

Ann and Nick Finocchio live on Benjamin Green Road and are neighbors of the NL Industries site. "It scares me," said Mrs. Finocc

Oldmans welcomed the new industry at first, but troubles soon bega

How a dream turned sour

By BRYON KURZENABE
Staff Writer

The abandoned National Smelting of New Jersey lead recycling facility in Pedricktown has run the gamut from industrial boon to environmental boondoggle.

More commonly known as the NL Industries toxic waste site, it has grown from the object of heated defamation into an issue of ethics and industrial responsibility much larger than the rusting structure that sits in quiet stoicism.

Township officials at first embraced the heavy metals smelter, after being promised a pristine facility and 200 new jobs. Anxious to fill its newly zoned industrial park and to secure over $31,000 in prospective annual taxes, the plant seemed an ideal foundation on which to build a prospering community.

But 19 years and 46 state and federal violations later, townsfolk are rehashing and regretting the decision and trying to prevent a recurrence of the events that groomed the site to become the 125th most hazardous place to be in the United States.

The prob[illegible] seems too immense for a town [illegible] even a traffic light. ...

Staff photo

The NL Industries site, now rated as one of the most toxic in the U.S., is now off limits to all but cleanup crews.

300056

Oldmans' new industry soon caused woe

Located on a 46-acre plot off Penns Grove-Pedricktown Road, the plant ceased operations in 1983 and today houses a closed landfill and decaying secondary lead smelting facilities. A still-active rail line, owned by Conrail, runs directly through the center of the property.

Although the site is popularly recognized as belonging to the multinational NL Industries Inc., it was sold in 1983 to National Smelting of New Jersey, a subsidiary of the National Smelting and Refining Co., which is owned by Standard Metals Corp. It operated sporadically for one year and closed soon after due to financial troubles.

NL Industries first ignited its blast furnace in 1972, embarking on the relatively simple process of recycling lead from spent automobile batteries.

The batteries were crushed and the sulfuric acid drained and removed for treatment. The lead plates were then removed for smelting in the furnace and the rubber byproducts buried in an on-site landfill.

It was not long before residents began to complain about the plant. Residents reported a lack of compli-

(Continued on page A-5)

(Continued from page A-1)

ance with accepted practices for storing and disposing of batteries. Trucks carrying the scrapped materials at times were seen to be dripping sulfuric acid from their beds.

And, during the late evening hours, residents said the plant would release an "orange fog" from its stacks that left a heavy residue on lawns and pools. A blue roof turned orange and a grayish-black dust began to form on car windows.

In 1975, the Salem County Public Health Department sampled 15 private drinking water wells near the facility. Lead levels were found to be unusually high, with one well exceeding established standards. The results prompted NL to fund an extension of Pennsville's municipal water system to homes on Benjamin Green Road.

The following year, the New Jersey Department of Environmental Protection sampled the plant's on-site wells and surface water and discovered elevated levels of various heavy metals, primarily lead.

The New York Times reported in May 1976, that past DEP Commissioner David Bardin had "hit the roof" when he became aware that an "orange fog" regularly left the confines of the plant and engulfed neighboring homes.

A 1977 air monitoring program initiated by the DEP found elevated levels of airborne lead, cadmium, antimony and ferrous sulfate in the area.

The DEP simultaneously discovered chloride materials being illegally released from the two huge blast furnace stacks, improper storage of raw materials and repeated spills of contaminated process waste waters which were alleged to be contaminating groundwater.

Small, brown-ringed holes pitted aluminum siding, automobile paint and windows throughout Pedricktown. Some residents were reimbursed by NL for the damage even though the company maintained that nearby industry and Delaware refineries bore at least partial responsibility.

Due to the barrage of toxic emissions from the plant's two looming stacks, the DEP ordered NL in 1978 to remove the furnace and replace it with a rotary kiln. It also imposed a $10,000 civil administrative penalty in 1979 for pollution of groundwater, marsh area and surface soil.

The concentration of lead in the soil at a depth of 2 inches had risen by 1978, six years after the start of operations, to 1,058 parts per million (the prescribed limit is 1.5 ppm) to a concentration of 2,420 ppm by 1980 in a plot located directly across from the plant's parking lot. The level exceeded 101,388 ppm near the plant's baghouse, which filtered furnace dust.

Ironically, as the contamination from the plant worsened, business was peaking. Approximately 200 workers were employed with a monthly payroll of $300,000, according to company's 1979 annual corporate report.

Pedricktown became known as the home of the state's last lead recycler (four others had closed by 1979) and received the accompanying distinction of having the highest levels of lead in its soil, water and air.

In 1978, quarterly air quality tests near the plant registered 5.28 micrograms of lead per cubic meter. The level increased to 6.66 ug/m3 in 1979 and 7.11 ug/m3 in 1980. To view these numbers in proportion, the level was only .66 ug/m3 in nearby Salem — even at a time when leaded gasoline fueled most cars.

The DEP issued a report in 1979 showing that lead collected by the air monitor was at a level of 6.6 ppm. "The standard has been exceeded during every calendar quarter since the monitor was installed," the agency reported.

It also reported that the cell doors of the rotary kiln had been improperly opened to allow ambient air flow, and that "pressure ... had increased in some cells to the point where gauge oil had been blown out of the manometer."

Particulate and lead emission rates for the kiln exceeded standards by up to three times the normal rate, forcing the DEP in 1980 to revoke NL's permit certificate.

In 1982, the company ceased smelting operations and entered an administrative consent order with the DEP to conduct a remedial program which included site soil removal and replacement, cleansing of paved plant areas, prevention of surface water runoff, closure and post-closure plans for the landfill, the installation of groundwater monitoring wells and a groundwater abatement system.

Almost simultaneously, the site was placed on the National Priorities List, a grouping of the nation's worst toxic waste sites requiring remedial

OLDMANS' DILEMMA: THE NL INDUSTRIES TOXIC WASTE SITE

First of A Six-Part Series

action under the federal Comprehensive Emergency Response, Compensation and Liability Act of 1980 (Superfund). The federal Environmental Protection Agency is authorized to implement the act.

Residents who had been adamant in their requests to force NL to comply with environmental law had thought the plant's shutdown was an end to a decade of toxic pollution. And most of all, they believed there could only be one company responsible for its cleanup.

But NL Industries soon sold the plant for $3.9 million to the National Smelting and Refining Co., a unit of Standard Metals Corp., which renamed the plant National Smelting of New Jersey. The transfer was approved by the state Economic Development Authority, which authorized $6.6 million in tax-exempt state industrial bonds for the new owners.

On Feb. 10, 1983, NL, NSNJ and the DEP entered into an amended administrative consent order in which the new company accepted liability for all groundwater and surface water contamination emanating from the facility except for that which stemmed from the closed landfill.

Of the funds raised by the bonds, $3.9 million went to underwrite the sale, while $2.7 million went to carry out terms of the amended consent order.

NSNJ also assumed responsibility for the groundwater monitoring system, but its ineffective implementation led the DEP to conclude the "program was not sufficient to determine whether . . . contamination is crossing the . . . property lines."

In less than a year, smelting operations ceased permanently and, during March 1984, NSNJ filed for bankruptcy under Chapters 11 and 7. The smelter was operating at 50 percent of its designed capacity at the time of the final shutdown that year.

The petition for bankruptcy has since been dismissed by a federal judge in Colorado.

NSNJ was soon fined $78,600 by the DEP in 1984 for a series of failures in the National Bank of Georgia, the trustee for the NSNJ and four other site bond holders, maintained environmental personnel at the site for landfill maintenance purposes until June 15, 1984. Three days later NL voluntarily entered the site to maintain the landfill and pump leachate which had accumulated in sumps.

The landfill housed the plastic and hard rubber case parts of automotive batteries, furnace and kiln slag, and contaminated surface soil removed by NL.

While officials focused on legal proceedings, hazardous material at the site was still contaminating the environment. The 2,000 tons of slag on the site contained sulfides which, in conjunction with rain water, formed sulfuric acid. People were fearful for the underlying Cape May Aquifer, a source of irrigation and potable water in the area.

Tests on wells at the Exxon division of Tomah Products, a facility located adjacent to the toxic waste site, showed in 1984 that the lead contamination had already crossed property lines. NSNJ still contended that slag "is *not* hazardous waste" and "*does not leach* heavy metals."

Samples from the four huge on-site slag heaps, however, showed one exceeded current standards in lead and three exceeded similar standards for cadmium, classifying it succinctly as "hazardous waste."

After it assumed ultimate authority, the EPA required NL to fund and conduct a long-term investigation at the site entitled a Remedial Investigation and Feasibility Study, a two-phase process.

Exceeding $1 million in cost, the purpose of the RIFS is to define the nature and extent of contamination from the site and use the data to identify and evaluate alternatives for addressing contamination.

Both phases of the remedial investigation have been completed, including the sampling of six potable wells near the site along U.S. Route 130 for antimony, arsenic, cadmium, chromium, copper, lead, selenium, total organic carbon, total organic halogen, sulfur, chloride, acidity, conductivity, gross alpha radiation and gross beta radiation.

Initial findings from the tests — which included 50 off-site soil locations — suggest that "no major contamination" exists outside the plant confines. However, additional cluster wells have been installed to monitor an underground plume of contamination moving towards the Delaware River.

High concentrations of lead have been found in the surface water (3 ppm) and sediment (3,060 ppm) of the west stream (ditch) at the site, and levels of 4,330 ppm have been discovered in sediment in the site's east stream.

The agency currently plans to finance the slag's removal with a $500,000 DEP fund secured from Standard Metals as a result of bankruptcy proceedings.

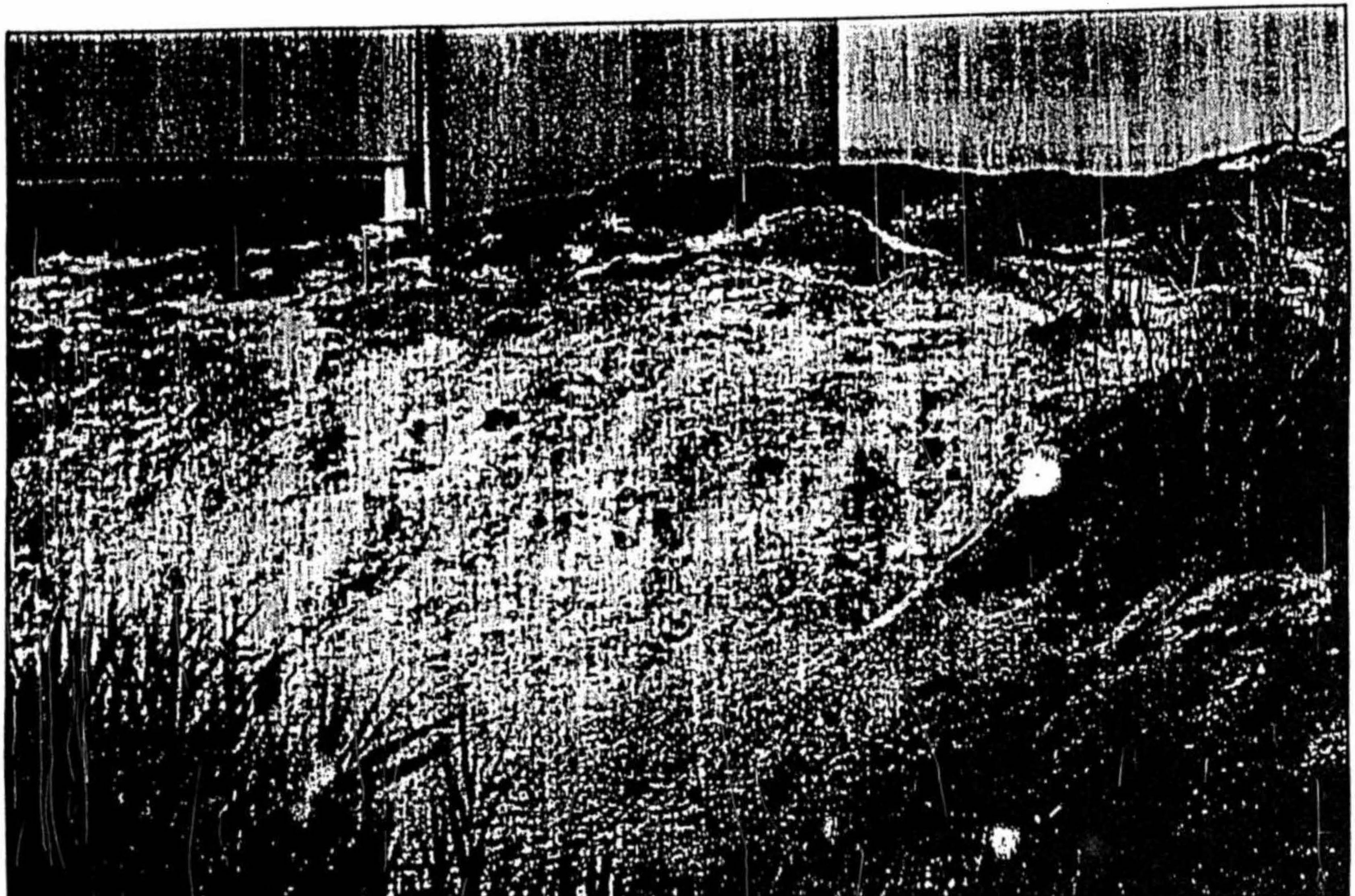
A separate $600,000 DEP fund also exists to pay for remediation, sampling and testing. It was created in 1982 when NL closed its plant and will be used to fund any EPA removal actions.

In May 1989, the EPA completed a $43,005 project involving the installation of a security fence and warning signs around the plant's perimeter, and the temporary encapsulation of the slag to prevent the migration of contaminants due to wind and water.

The slag was re-encapsulated in November 1989 and the remaining buildings on the site were closed off to deter trespassers. An estimated 40,000 pounds of materials were removed for recycling and a lesser amount for disposal.

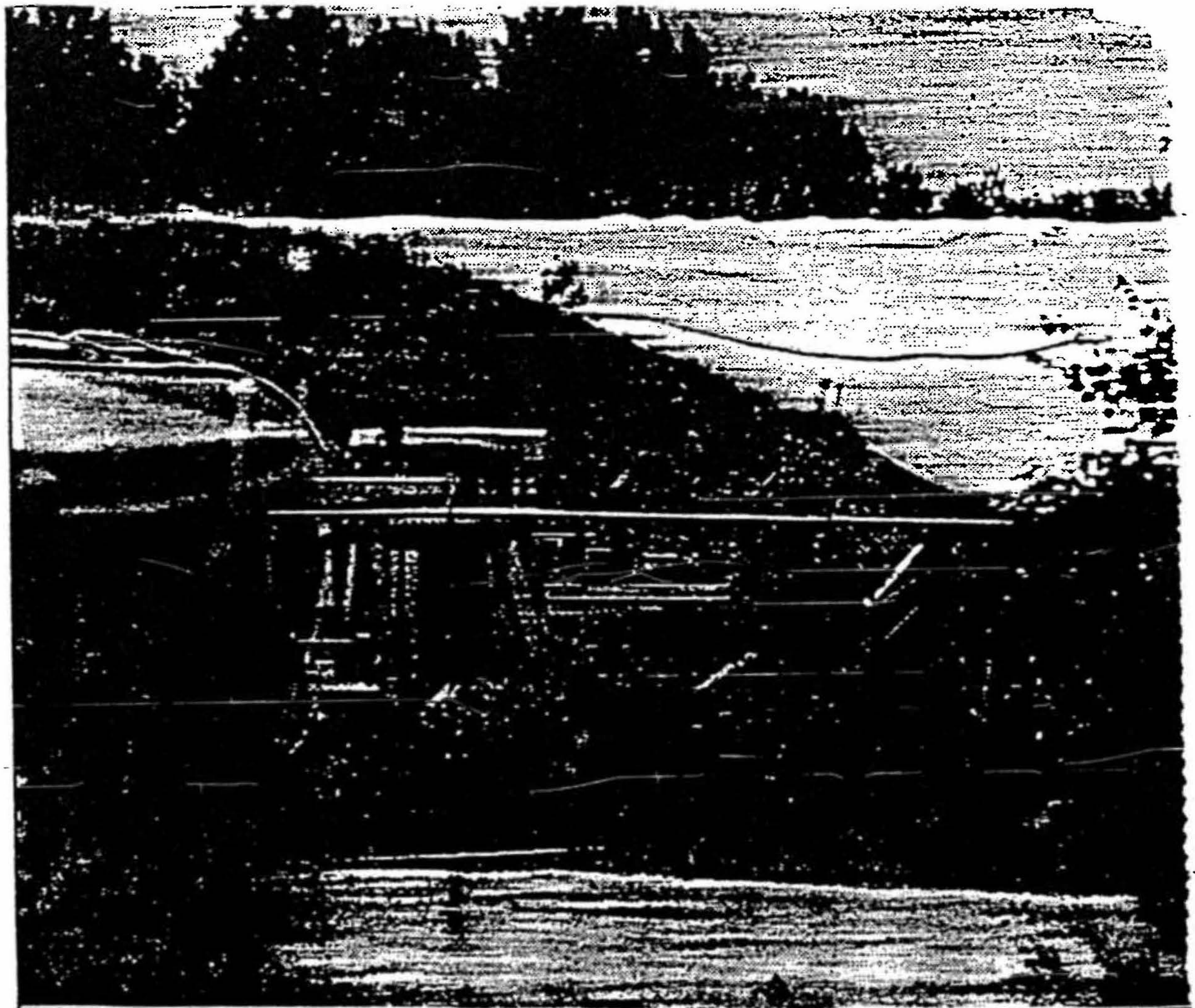
Prior to the final release of the RIFS in April, the EPA will conduct an intensive round of sampling on the trace contaminants in the slag, surface water and buildings to decide how to speed up the removal of those hazardous materials.

Tomorrow: A look at NL as a company.



Staff photo by Paul Skoen

Encapsulation material (white material) seen on piles of leftover waste at the NL Industries site last summer.



Staff photo by Paul B

Plastic was placed over part of the NL site's closed landfill during the summer.

We couldn't put our homes up for sale," concurred Mrs. Kennedy.

Some say reality never hits home until it affects one's health or his pocketbook. Reality has hit home.

"It's kind of hard for us. It was almost like it was just hidden, just forgotten. But it's still sitting there," said Shawn Kennedy.

Kennedy, 23, is one of the children in the area who grew up along with the plume of contamination.

"We used to go back there and go sledding (on the landfill) and so forth. You could go back there anytime you wanted . . . One of the kids got cut on a piece of metal from one of the scrap batteries," he said.

One teen-ager said the site "was like a giant playground." He and his friends used to steal the 75-pound solid lead bars the company used to hold down the huge sheets of plastic on top of the landfill.

"I don't go near the place. It scares me," said Harbeson's 1? year-old son, Brian. You can see in encroaching

"My older boy (Stephen) doesn't care if he ever comes back to this area. I think about it. But what am I going to do?" said Harbeson, 48, who owns 2.25 acres here.

"The consensus of opinion is not that NL is motherhood and apple pie at this stage of the game," agreed Stephen Holt, NL's site manager of environmental control and safety.

Although EPA officials say incidental exposure to on-site contaminants will most likely not yield grave consequences, repeated exposure will. Still, on the site are more than 1 million gallons of contaminated surface water, a closed landfill and 40 million pounds of lead slag — 20,000 tons — 5,000 cubic yards.

"I used to get fighting mad. I was going off the deep end . . . I was really hyper," said Harbeson.

But today frustration has yielded to resignation — and even a small degree of shame.

"You almost feel like you did something wrong . . . You feel dirty," said Mrs. Kennedy. "To me it's like a skelhazardous waste site.

"Why should the EPA, with our tax dollars, clean up something that a company made millions of dollars off of?" asks resident James McCourt of U.S. Route 130. "Give 'em a couple trucks and a bulldozer."

Ironically, it is a tough matter for some residents to decide who is the bigger culprit — NL, the DEP or the EPA.

Although the two government agencies are designed to work in the citizenry's interest, their priorities have been questioned for years, especially after the DEP authorized the sale of the troubled plant to NSNJ and the EPA seemed to be doing nothing but conducting test after relentless test.

"I know (the township) had a meeting to get people to form a committee . . . to hire a company to motivate the EPA, but I told them that I can't see paying someone money to motivate the EPA which should be motivated already," Finocchio said.

"Nothing materializes out of each meeting after meeting. They always end up having to take another survey all over again. It's all a waste of money . . . and mismanagement really. I can't imagine it would take so long," he argued.

"I know that the DEP and the EPA did absolutely nothing for us on the street. Nobody would listen to us . . . We've never gotten any steadfast answers as to who did what or why," said Mrs. Kennedy.

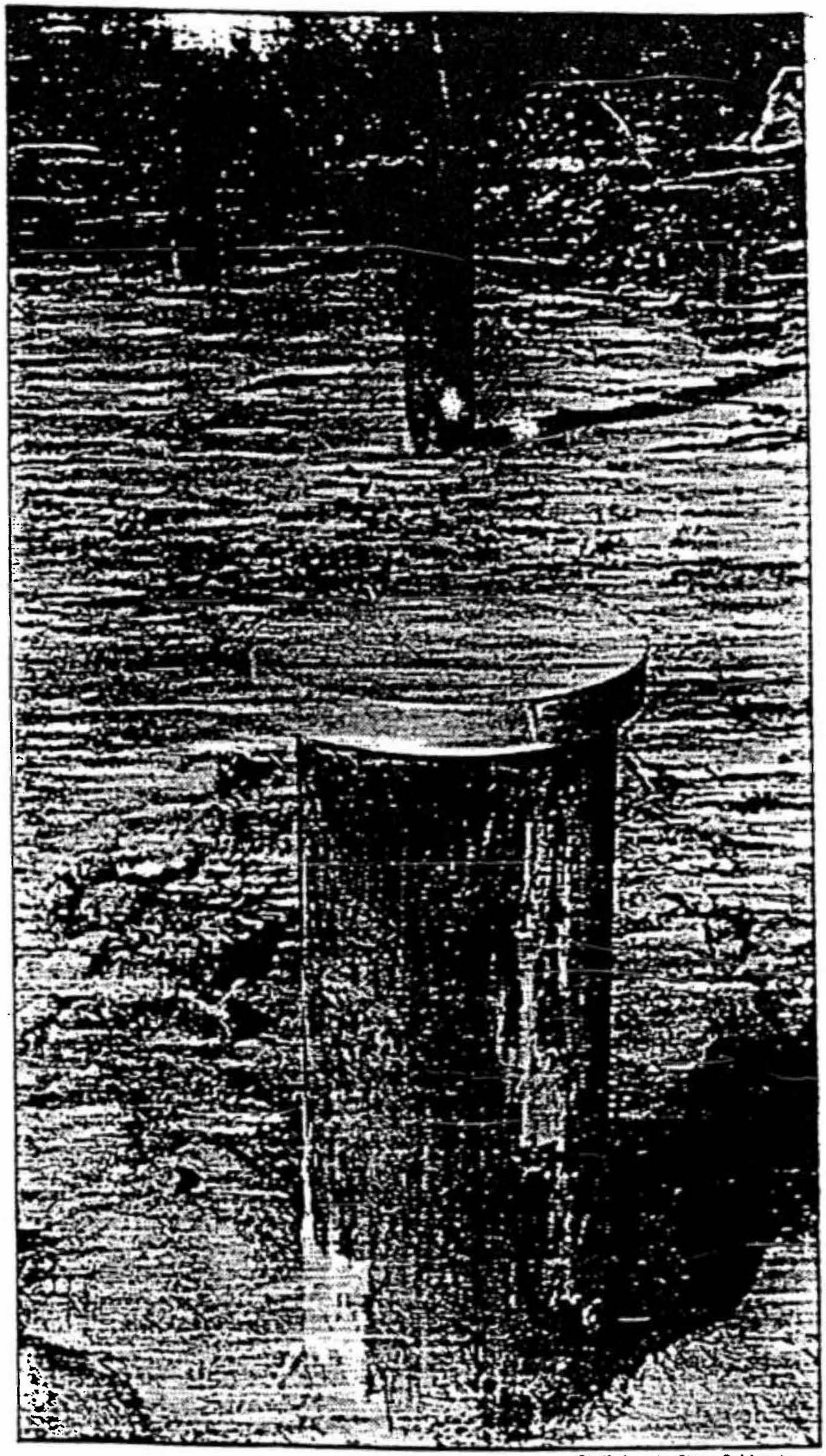
Her family, in addition to two others, posted "No Trespassing" signs on their property last year to ward off public officials who wanted to test their wells for a third or fourth time.

James Carpenter endured months of rescheduled appointments to drill a well on his property, only to have it run over by heavy machinery and never tested.

But, today, priorities have changed. NL is gone, the contamination is unseen and there are other paths that do not pass by the "mountain" of a landfill and its rusting counterpart for people on the way to the supermarket.

"The thing that bothers us most is that if we decide to relocate . . . what can we do about selling the place? Nobody wants to buy a home in a polluted area, especially a well-known one," said Finocchio.

"We couldn't give our homes away.



Staff photo by Steve Goldstein

Monitoring wells now dot the area near the NL site.

3-06-62

NL landfill has long be... subject of complaints

By BRYON KURZENABE
Staff Writer

OLDMANS TWP. — The NL Industries hazardous waste landfill — the only portion of the 46-acre Superfund site still owned by the former smelting company — has a distinct history of non-compliance and poor maintenance.

Although NL Industries Inc. was given conditional approval by the state Department of Environmental Protection to operate the landfill in 1978, a 1982 DEP administrative order said the company had "clearly demonstrated an inability to operate the landfill in compliance with the conditions of that approval and the regulations of the Department."

The order came in response to NL's petition to add 3.7 acres to the existing 5.7 acres of landfill by dumping to raise the elevations and increasing the slopes of the landfill's sides to steeper angles.

The DEP rejection was based upon NL's failure to comply with established criteria, as it already had filled the landfill beyond its maximum height of 36 feet above sea level and allowed contaminated runoff to leach into the surrounding soil.

The company also had allowed rain water to infiltrate the landfill's two leak detection systems, failed to pump leachate regularly from its sump pumps and did not install gas monitoring wells alongside of the landfill.

In addition, NL missed the deadline for construction of the initial portion of the landfill by one year, the installation of a clay cap by 20 months, the implementation of a groundwater monitoring system by 21 months and the submission of engineering certification by two years.

The bowl-shaped landfill houses cooled furnace/kiln slag and rubber and plastic battery casings. A multiple liner system of 10-millimeter plastic and a 2-inch barrier of compacted hydraulic asphalt concrete was constructed to prevent leachate from contaminating the surrounding area.

The leachate is collected by pipes which empty into a 20,000-gallon tank, which is disposed of at the Du Pont Co.'s Chambers Works facility in Deepwater or Rollins Environmental Services in Logan Township, Gloucester County. The tank is emptied once or twice each month.

Two gas monitoring wells vent the methane generated by the landfill's innards.

Additional well tests are conducted quarterly for acidity, sulfates, turbidity, cadmium, lead, manganese and arsenic. Water samples are taken semi-annually for organic compounds and halogens (which include chlorine, iodines, bromine and fluorine).

Although the landfill's design may seem effective on paper, as early as 1981 six separate analyses of liquids collected in the leak detection and removal system revealed clear evidence that leachate contamination had extended beyond the liner system within the first year of operation.

Both liners were originally recognized as effective but, with the passage of the recent federal Resource Conservation and Recovery Act, only the plastic liner was designated as an effective means to prevent leachate, according to the federal Environmental Protection Agency.

Since only one liner is recognized as effective, questions have arisen as to whether NL will be required by the EPA to upgrade the landfill in the 1993 Record of Discovery, the official cleanup solution for the entire site.

"As far as we know it's doing the job. If you're asking whether we're going to rebuild the landfill, that's something that is going to be addressed by the Record of Discovery," said Stephen Holt, NL's senior environmental engineer for the landfill.

Holt is a registered professional engineer in California with a bachelor of science degree in industrial management. His role regarding the landfill is "primary functional responsiblity for facility compliance with hazardous waste and substance activities, including the construction and operation of the hazardous waste landfill facility, employee safety and industrial hygiene."

Holt previously worked as project administrative superviser assisting in Remedial Investigation and Feasibility Studies at NL sites in Dallas, St. Louis Park, Minn., and Granite City, Ill.

"The media has presented these photographs of oozing drums . . . and these green goblin things that come up through the goo and the mire. The slag was transferred to the landfill in bulk. It was not drums of oozing (material)," he said.

However, the DEP discovered around 1980 that NL was depositing kiln slag that had not been properly cooled into the landfill.

Residents neighboring the landfill, which sits on 8½ acres, recall huge pools of standing water collecting on the "mountain" as it was being formed. Gaping holes as deep as the landfill is high were allegedly filled and covered by the asphalt liner implemented under to DEP design specifications, according to residents.

"At one time NL had a guard (at the landfill) that was a friend of ours, and one day we took a ride back there . . . and saw this collector and it was a little kiddie swimming pool about 18 inches high. And I thought that with all this scientific talk, this didn't make sense to me," said Nicholas Finocchio of Benjamin Green Road.

State officials confirm Finocchio's observation, stating that it was a temporary measure during the early years of maintenance while NL's engineers attempted to generate a more adequate collection system.

Cluster wells placed along the perimeter of the site and its landfill will make the final determination whether what was not collected by the system leached into and contaminated both soil and ground water.

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FILED
UNITED STATES BANKRUPTCY COURT
DISTRICT OF COLORADO
FEB - 4 1988

UNITED STATES BANKRUPTCY COURT FOR THE DISTRICT
OF COLORADO

In re:	)	
	)	Bankruptcy No. 84-B-00948-J
NATIONAL SMELTING & REFINING	)	
CO., Inc.,	)	
	)	
Debtor.	)	Chapter 7

NOTICE PURSUANT TO RULE 23

TO ALL PARTIES IN INTEREST:

NOTICE IS HEREBY GIVEN that the Trustee intends to sell to Master Metals, Inc. certain non-extrusion equipment, extrusion equipment, lab equipment and metal located at Debtor's lead smelting facility in Atlanta, Georgia, for a purchase price in excess of $27,525.00. The final purchase price shall not be known until the metal removed by Master Metals, Inc. is weighed for sale. A copy of the December 15, 1986 Offer to Purchase from Master Metals and a January 28, 1988 letter modifying said offer are on file with the United States Bankruptcy Court for the District of Colorado as "Exhibit A" and "Exhibit B" to Trustee's Motion to Sell Property of the Estate Free and Clear of Liens. The equipment shall be sold free and clear of liens, liens to attach to proceeds of sale.

Pursuant to Rule 23 of the Local Rules of Bankruptcy Procedure, the Court will act on the aforementioned Motion to Sell Property of the Estate Free and Clear of Liens on February 26, 1988, in the absence of a request for a hearing by an interested party. Any party that desires a hearing on said application must request a hearing by filing a written request for hearing with the Court no later than February 23, 1988.

The ORIGINAL of said request must be filed with the Clerk of the United States Bankruptcy Court, 1845 Sherman Street, Room 400, Denver, Colorado 80203, and a COPY mailed to the applicant named below.

Objections or requests for hearing shall clearly specify the grounds upon which they are based, including the citation of supporting legal authority, if any. GENERAL OBJECTIONS OR REQUESTS FOR HEARINGS WILL NOT BE CONSIDERED BY THE COURT.

N15-078G.M

500001

THE ASSEMBLY
STATE OF NEW JERSEY
TRENTON

JACK COLLINS
ASSEMBLYMAN 3RD DISTRICT
SALEM-CUMBERLAND-GLOUCESTER COUNTIES
63 EAST AVENUE
WOODSTOWN, NJ 08098
609-769-3633
609-769-3636

COMMITTEES
CHAIRMAN
ECONOMIC GROWTH
AGRICULTURE & TOURISM
MEMBER
HIGHER EDUCATION &
REGULATED PROFESSIONS

June 3, 1988

Dhruva G. Kanjarpane, Case Manager
Department of Environmental Protection
Division of Hazardous Waste Management
401 East State Street
CN 028
Trenton, New Jersey 08625

Dear Mr. Kanjarpane:

Mr. Edward J. Rosinski, Chairman of the Oldmans Planning Board contacted me regarding the NL-NS Site in the Township.

I would appreciate your attention to Oldmans Township's request to spend the funds to clean up the site while the RI-FS studies are in progress.

Thank you for your consideration concerning this matter.

Sincerely,

Jack Collins

Jack Collins
Assemblyman
3rd District

JC:vh
Enclosure

c: Edward J. Rosinski

FEB 5 1990

Honorable William J. Hughes
House of Representatives
341 Cannon House Office Building
Washington, DC 20515

Dear Mr. Hughes:

This letter is to inform you of the status of the multi-phased Removal Action at the NL Industries, Inc. Superfund site located in Pedricktown, New Jersey. This effort has been conducted by the U.S. Environmental Protection Agency (EPA).

As you may recall, Phase I of the Removal Action was completed in May 1989, and had two objectives. The first was to enclose the site's former smelting facility with a high-security fence. The second objective was to encapsulate temporarily the four slag piles located within the fence perimeter, thus reducing the migration of slag particulate via wind transport and surface runoff.

Phase II of the Removal Action commenced in November 1989 and is near completion. It has addressed the following: further treatment of the slag piles, the security of the contaminated buildings, and the removal of the most toxic and reactive materials.

Berms composed of sand and straw were installed around each of the slag piles to aid in containing the slag and to filter surface runoff. In addition, the slag piles were treated with a second coating of the same encapsulant to reduce further slag migration.

Chain-link fence gates were installed at all entrances of the contaminated buildings to deter trespassing. Moreover, the leaky roof of the storage building which houses the lead oxide pile was repaired.

Over 40,000 pounds of toxic and reactive materials were removed from the site, with the bulk to be recycled and the remainder sent for disposal to a permitted landfill. These materials included arsenic, metallic sodium, red phosphorus and waste oil. A modest quantity of these materials remains at the site, awaiting analysis and/or disposal acceptance in the near future.

Currently, EPA is conducting Phase III of the Removal Action, which consists of extensive sampling of the slag piles, lead oxide pile and surface water at the site's former smelting facility to determine whether and how these materials can be remediated on an expedited basis. In addition, the longer term, comprehensive studies which will address all remaining contamination at the site are continuing.

We will continue to keep you informed of our progress at the NL Industries, Inc. site. Thank you for your continued interest in this matter.

If you would like to discuss any of the above in further detail or require additional information, please let me know, or have your staff contact Jeane Rosianski of the Office of External Programs at (212) 264-7834.

Sincerely,

Constantine Sidamon-Eristoff
Regional Administrator

cc: Judith Yaskin, Acting Commissioner, NJDEP
Rose Swaverly, Mayor, Oldmans Township

bcc: Eugene Dominach, ERRD-RAB
Jeane Rosianski, OEP
Gary Worthman, ORC

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON, NEW JERSEY 08837

EPA REGIONAL GUIDANCE DOCUMENTS

The following documents are available for public review at U.S. EPA Region II Headquarters, Raritan Depot, Woodbridge Avenue, Edison, New Jersey, during regular business hours. Contact Douglas Kodama at (908)906-6905 for more information.

- Glossary of EPA Acronyms
- Superfund Removal Procedures--Revision #3. OSWER Directive 9360.0-03B, February 1988.
- Hazardous Waste Operations and Emergency Response. Notice of Proposed Rulemaking and Public Hearings. 29 CFR Part 1910, Monday, August 10, 1987.
- Redelegation of Authority under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). OSWER Directive 9012.10, May 25, 1988.
- Removal Cost Management Manual. Office of Solid Waste and Emergency Response (OSWER) Directive 9360.0-02B, April 1988.
- Field Standard Operating Procedures (FSOP)
  #4 Site Entry
  #6 Work Zones
  #8 Air Surveillance
  #9 Site Safety Plan
- Standard Operating Safety Guidelines--U.S. EPA Office of Emergency and Remedial Response, July 5, 1988.
- CERCLA
- SARA
- National Oil and Hazardous Substances Pollution Contingency Plan (NCP)